CONTRIBUTIONS TOWARD A FLORA OF PANAMA [1]

VI. Collections chiefly by H. von Wedel in Bocas del Toro

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GRAMINEAE

(Jason R. Swallen)

Cryptochloa Swallen, gen. nov.

Monoecia; spiculis masculis et femineis in eadem inflorescentia dispositis; spiculae masculae: glumae et lemma sterile nulla; lemma acutum vel acuminatum, 1-nervio; palea lemma aequans; stamina 3; spiculae femineae: gluma prima nulla; gluma secunda et lemma sterile subaequalia acuta vel acuminata, 3–5-nervia, nervis lateralibus approximatis; fructus stipitatus, subcylindricus, firmus, albus vel fuscus, marginibus non involutis; palea lemma aequans. Perennis culmis gracilibus, planis, et laminis latis, planis, breve petiolatis.

Low monoecious perennial grasses with broad flat blades usually crowded toward top of the slender wiry culms. Inflorescence small, usually partly hidden in the upper sheaths, each bearing both staminate and pistillate spikelets in no definite arrangement; staminate spikelet: glumes and sterile lemma wanting; lemma and palea acute or acuminate, thin, the lemma 1-nerved; stamens 3; pistillate spikelet: first glume wanting; second glume and sterile lemma acuminate, subequal, 3- or usually 5-nerved, the lateral nerves approximate, finely transversely veined; fertile floret subcylindrical, raised on the enlarged and thickened segment of the rachilla; lemma firm, subindurate, smooth and shining, gradually narrowed to the blunt tip, the margins not inrolled; palea as long as the lemma, similar in texture.

A genus of southern Mexico and Central America.

Type species: *C. variana.*

Name from κρυπτὸς, hidden, χλόα, grass, referring to the partly enclosed panicles and also its forest habitat.

[1] Issued December 18, 1942.

This genus is closely related to *Raddia* Bertol. *(Strephium* Schrad., type *S. distichophyllum)* and has been confused with it. *Raddia,* however, has the staminate and pistillate spikelets in separate inflorescences (the staminate terminal or from the upper nodes, the pistillate axillary); the fertile floret is not raised on the lengthened and thickened segment of the rachilla; the fruit is much smaller, oval or ovate rather than subcylindrical, and the lateral nerves of the second glume and sterile lemma are evenly spaced rather than approximate.

Diandrolyra Stapf and *Olyra* L. are also close kin. The first is distinguished by the spikelets arranged in pairs, one staminate and one pistillate, the fruit is not raised on an enlarged segment of the rachilla, and the lateral nerves of the second glume and sterile lemma are evenly spaced rather than approximate. There are also only two rather than three anthers. In *Olyra* the panicles are all terminal on the main culm and branches, not axillary, the pistillate spikelets at the ends of the branches and the staminate below. The second glume and sterile lemma are usually attenuate, with the lateral nerves evenly spaced, not approximate. The fruit is sessile, relatively broad and thick, with the margins of the lemma inrolled, rather firmly clasping the palea.

KEY TO SPECIES

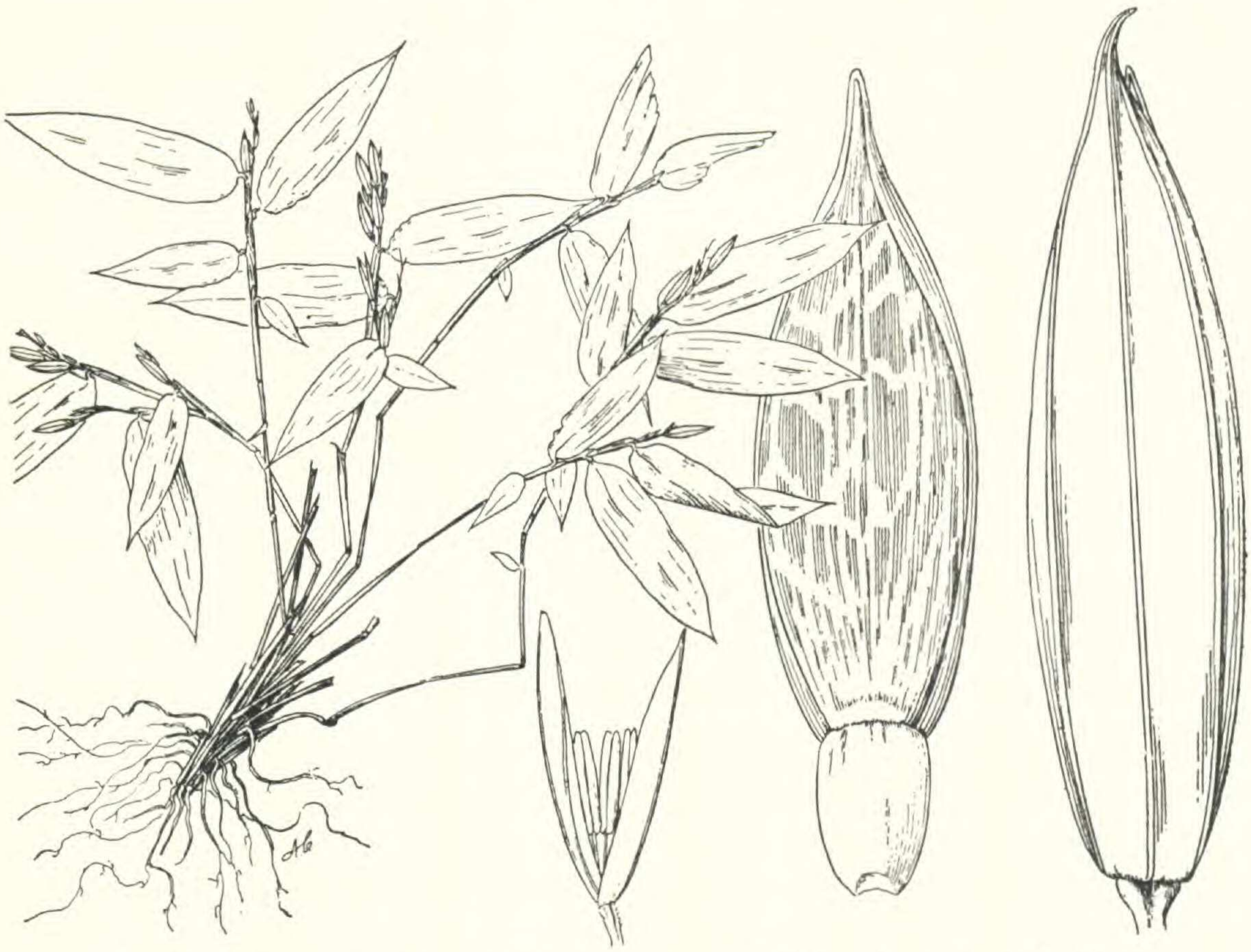
Culms 10–30 cm. high, slender; staminate spikelets 2.5–3 mm. long.
- Blades 3–5 at the summit of each culm, 3–5 cm. long, not conspicuously distichous ..... *1. C. variana*
- Blades 10–20 at the summit of each culm, 1.5–3 cm. long, conspicuously distichous ..... *2. C. concinna*

Culms 20–50 cm. high, at least some of them more than 30 cm., relatively coarse; staminate spikelets 4.5–5 mm. long.
- Panicles, or at least some of them, exserted on long slender peduncles; blades oblong, 3.5–5.5 cm. long, mostly 12–20 mm. wide; second glume and sterile lemma of pistillate spikelets smooth; lemma of staminate spikelets acute..*3. C. strictiflora*
- Panicles, all of them, partly enclosed in the sheaths, the peduncles short; blades lanceolate, 6–7.5 cm. long, 10–13 mm. wide (occasionally as much as 10 cm. long and 27 mm. wide); second glume and sterile lemma of fertile spikelet granular-roughened; lemma of staminate spikelet subattenuate.....*4. C. granulifera*

1. CRYPTOCHLOA **variana** Swallen, sp. nov. Culmi caespitosi, 10–20 cm. alti, infra nodos pubescentes; vaginae carinatae marginibus pubescentibus; ligula 1–3 mm. longa, obtusa, pubescens; laminae 3–5 cm. longae, 8–13 mm. latae, oblongo-lanceolatae, acutae vel acuminatae, minute pubescentes; spiculae masculae 2.5 mm. longae, lemmate subacuto; antherae 1 mm. longae; spiculae femineae 7–8.5

mm. longae, gluma secunda et lemmate sterili acutis vel acuminatis, 3-nerviis, glabris; fructus 6.5–7 mm. longus, subcylindricus, fuscus.

Culms in small dense tufts, wiry, 10–20 cm. tall, erect to spreading, often geniculate at the densely pubescent nodes, glabrous, or pubescent below the nodes, the lower internodes somewhat elongate, the upper ones much shorter, completely hidden by the overlapping sheaths; sheaths keeled, pubescent toward the summit and on the margins, nearly glabrous on the back, often auriculate, the auricle



Cryptochloa variana: Plant, × ½; staminate spikelet, fruit, and pistillate spikelet, × 10.

fused with the ligule, the lower ones bladeless or with very much reduced blades; ligule 1–3 mm. long, membranaceous, obtuse, puberulent on the back or nearly glabrous; blades 3–5 on each culm, crowded toward the summit, 3–5 cm. long, 8–13 mm. wide, oblong-lanceolate, rather abruptly narrowed to an acute or acuminate tip, broad and rounded at the base, with a densely pubescent petiole about 1 mm. long, minutely pubescent on both surfaces or sometimes only obscurely puberulent; inflorescences terminal and axillary, partly enclosed in the sheaths, 2–3 cm. long, bearing 1–6 pistillate spikelets, the branches closely appressed, usually pubescent; staminate spikelet 2.5 mm. long, the lemma subacute, the palea as

long as or slightly longer than the lemma; anthers 1 mm. long; pistillate spikelet 7–8.5 mm. long, the pedicel 4–10 mm. long, relatively stout, much enlarged toward the summit; second glume and sterile lemma 3-nerved, with a few fine transverse nerves, glabrous or obscurely scaberulous, the second glume acute, the sterile lemma acute or subacuminate, slightly exceeding the second glume; fruit 6.5–7 mm. long, 2 mm. broad, subcylindrical, broadest above the middle, gradually narrowed to a blunt tip, smooth, shining, gray-greenish, at maturity mottled with darker drab; rachilla segment between the sterile lemma and the fruit enlarged and elongated, 1–1.5 mm. long, about as thick as the base of the fertile floret, whitish, somewhat soft or waxy in appearance; caryopsis 4.5 mm. long, light brown.

PANAMA: CANAL ZONE: near bank of Madden Reservoir, *Muenscher 12212*. COCLÉ: hills north of El Valle de Antón, alt. 1000 m., July 14, 1940, *Allen 2201* (U. S. National Herb., TYPE).

The name *variana*, meaning vari-colored, refers to the mottled fruits.

2. CRYPTOCHLOA **concinna** (Hook f.) Swallen, comb. nov. *(Olyra concinna* Hook. f. Bot. Mag. [Curtis] III, **52**: *pl. 7469*. 1896; *Raddia concinna* Chase, Proc. Biol. Soc. Washington **21**: 185. 1908.). Culms 15–30 cm. high, slender, erect, or geniculate at the lower nodes, the lower and especially the middle internodes much elongated, the upper ones very short; sheaths keeled, glabrous or pubescent; ligule truncate, 0.3–1 mm. long; blades 1.5–3 cm. long (usually 2 cm.), 5–9 mm. wide, crowded on the upper third of the culm, 10–20 on each culm, conspicuously distichous; inflorescences small, almost entirely hidden in the uppermost sheaths; fertile spikelet 8–10 mm. long, the second glume and sterile lemma subequal, subacuminate, 3–5-nerved, with fine transverse veins, glabrous; fruit about 8 mm. long, subcylindrical, scarcely broadened above the base, gradually narrowed to the blunt or rounded tip.

Wet forests at low altitudes, Nicaragua, Costa Rica, and Colombia.

NICARAGUA: Sandy Bay, 1922, *Hamilton s.n.*

COSTA RICA: LIMÓN: Hamburg Finca, Río Reventazón below Cairo, *Standley 48661, 48783, 48854; Oesterr. Biol. Costarica-Expedition 680*, 1930, (coll. *Cufodontis*).

COLOMBIA: BOLÍVAR: Norosi-Tiquisio trail, Lands of Loba, *Curran 129*.

3. Cryptochloa **strictiflora** (Fourn.) Swallen, comb. nov. (*Strephium strictiflorum* Fourn. Bull. Soc. Bot. Belg. **15**: 465. 1876; *Olyra strictiflora* Hemsl. Biol. Cent. Am. Bot. **3**: 510. 1885; *Raddia strictiflora* Chase, Proc. Biol. Soc. Washington **21**: 185. 1908.). Culms 20–50 cm. high, erect or geniculate at the lower nodes, pubescent, more so on one side than the other, the nodes retrorsely pubescent, the intermediate internodes elongate; sheaths keeled, glabrous or pubescent; ligule 2–3 mm. long, obtuse, fused with the auriculate summit of the sheath; blades scarcely crowded, sometimes not at all, oblong, 3.5–5.5 cm. long, 12–20 mm. wide, abruptly narrowed to an acute tip, glabrous or minutely puberulent, the margins scabrous; inflorescences terminal and axillary from the middle and upper sheaths, at least some of them on long slender exserted peduncles; staminate spikelets 4.5 mm. long, the lemma acute; fertile spikelet 11–12 mm. long, the second glume and sterile lemma acuminate, subequal, 5-nerved, very faintly transversely veined; fruit 7 mm. long, subcylindrical with nearly parallel margins, ivory-white.

Gulf region of Mexico.

Mexico: veracruz: Mirador, *Liebmann 266;* Hacienda de Jovo, *Liebmann 267;* Córdoba, 1865-66, *Bourgeau.*

4. Cryptochloa **granulifera** Swallen, sp. nov. Culmi graciles, erecti, ad 50 cm. alti, nodiis pubescentibus; vaginae carinatae glabrae vel ad apicem pubescentes; ligula 0.5–2 mm. longa, obtusa; laminae lanceolatae, 6–7.5 cm. longae, 10–13 mm. latae, acuminatae, marginibus scabris; paniculae 2–5 cm. longae, contractae; spiculae masculae 4.5–5 mm. longae, lemmate subattenuato; spiculae femineae 11–12 mm. longae, gluma secunda et lemmate sterili acuminatis, 5-nerviis, granulosis; fructus 7–8 mm. longus, albus.

Culms slender, erect, occasionally somewhat geniculate at the lower nodes, as much as 50 cm. high, pubescent in a line on one side, the nodes retrorsely pubescent, otherwise glabrous; sheaths keeled, glabrous, or pubescent toward the summit, mottled with dark spots; ligule 0.5–2 mm. long, obtuse, pubescent, fused with the auriculate summit of the sheath; blades broadly lanceolate, the upper ones 6–7.5 cm. long, 10–13 mm. wide (sometimes 20 mm.), rather gradually narrowed to an acuminate tip, glabrous on both surfaces, the margins scabrous; panicles 2–5 cm. long, contracted, partly enclosed in the upper sheaths; staminate spikelets 4.5–5 mm. long, the lemma acuminate or subattenuate, appearing as if awned; fertile spikelet 11–12 mm. long, the second glume and sterile lemma subequal, acu-

minate, 5-nerved, finely transversely nerved, granular-roughened; fruit 7–8 mm. long, ivory-white, narrowed at the summit to a blunt tip.

Forests, Mexico, Honduras and Guatemala.

MEXICO: VERACRUZ: Fortuña, Coatzacoalcos River, *Williams 8378*. CHIAPAS: Finca Irlanda, *Purpus 7403*.

HONDURAS: Puerto Siena, forest along Tela River, Feb. 4, 1903, *Wilson 325* (U. S. National Herb., TYPE).

GUATEMALA: SAN MARCOS: Río Mopá, below Rodeo, *Standley 68769*. This specimen differs from the type in having blades as much as 10 cm. long and 27 mm. wide.

CYCLANTHACEAE

CARLUDOVICA DRUDEI Mast.—CHIRIQUÍ: vicinity of Puerto Armuelles, alt. 0-75 m., July 28-31, 1940, *Woodson & Schery 910*. Originally described from plants of Colombian origin cultivated at Kew.

CARLUDOVICA ENSIFORMIS Hook.f.—CHIRIQUÍ: vicinity of Bajo Chorro, alt. 1900 m., July 20-22, 1940, *Woodson & Schery 625*; Casita Alta to Cerro Copete, Volcán de Chiriquí, alt. 2300-3300 m., July 10, 1940, *Woodson & Schery 373*. Previously considered to be an endemic of Costa Rica.

CARLUDOVICA **integrifolia** Woodson, sp. nov. Planta ut videtur gracilis scandens. Folia longiuscule petiolata membranacea; lamina 22–30 cm. longa 4–6 cm. lata elliptico-oblanceolata apicem versus late acuta ibique levissime crenulata deinde abrupte angusteque subcaudato-acuminata basim versus (ca. 2/3 longitudine) integra gradatim acuta; petiolo 12–15 cm. longo ca. 2/3 longitudine vaginato. Pedunculus 5–6 cm. longus tenuis, spatharum nodiis ca. 3 sat distantibus. Spadix in fructu immaturo fusiformi-cylindricus ca. 2.0–-2.5 cm. longus basi ca. 0.4 cm. crassus; floribus femineis parvis concrescentibus ca. 0.5 cm. diam., stigmatibus sessilibus parvis, lobis perigonialibus tenuissimis vix manifestis. Spathae deciduae ut videntur ca. 3 parvae pedunculi in parte dimidia superiore gestae.—DARIÉN: along the Sambú River, southern Darién, above tide limit, Feb., 1912, *Pittier 5560* (U. S. Nat. Herb., TYPE).

As far as I am aware, only three species of *Carludovica* previously have been described with entire leaves: *C. diversa* Drude, *C. Trailiana* Drude, and *C. heterophylla* Mart., all from Brazil. The three species previously described apparently were found with both entire and bifid leaves (the entire leaves all of outline significantly different from ours), with larger spadices, and with only 1 or 2 spathes.

Our type specimen bears 6 leaves, all entire and so uniform as to indicate that to be the normal condition of the foliage.

Another entire-leaved *Carludovica* was collected by P. C. Standley in the garden of C. W. Powell at Balboa, C. Z., in 1925. The specimen (in U. S. Nat. Herb. no. 1252076) consists of a single leaf of the same general outline as those of *C. integrifolia* but much larger (about 50 cm. long, 12 cm. broad), and is accompanied by the following remarks: "Said to be from the nearby woods. Acaulescent. Leaves all simple." No similar plants have been encountered in the Canal Zone since that time, and the cultivated plant apparently was lost when Mr. Powell's collections were removed by the Missouri Botanical Garden.

CARLUDOVICA KILLIPII Standl.—DARIÉN: Cerro de Garagará, Sambú basin, southern Darién, alt. 500–974 m., Feb. 7, 1912, *Pittier 5658*. Originally described (Field Mus. Publ. Bot. **22**: 65. 1940) from the region of Buenaventura Bay, Colombia. I have not been able to check the Pittier specimen with that of Killip, but Schery, who has seen both, regards them as probably conspecific.

CARLUDOVICA MICROCEPHALA Hook.f.—BOCAS DEL TORO: Water Valley, Sept. 23, 1940, *H. von Wedel 921*. Previously known to occur in the Greater Antilles, Honduras, and Costa Rica.

CARLUDOVICA MICROPHYLLA Oerst.—CHIRIQUÍ: Río Chiriquí Viejo valley, April 8, 1938, *G. White 75;* vicinity of Bajo Mona and Quebrada Chiquero, alt. 1500 m., July 18, 1940, *Woodson & Schery 567*. Previously considered as an endemic of Costa Rica. *White 75* is quite typical of the species as exemplified by other herbarium specimens. However, *Woodson & Schery 567* has very slender leaves attaining 60 cm. in length and seems to correspond perfectly with the diagnosis of *C. stenophylla* Standl. (Fl. Costa Rica, p. 130. 1937) which was described from sterile plants. Our flowering and fruiting specimens have inflorescences quite conformable with those of *C. microphylla,* particularly with regard to the persistent spathes. Since similarly sharp leaf variation has been found to occur in other species represented by a number of herbarium specimens (cf. *C. ensiformis* and *C. Oerstedii*), we are tentatively regarding *C. stenophylla* as a synonym of *C. microphylla.*

CARLUDOVICA **Pittieri** Woodson, sp. nov. Planta mediocris ut videtur subacaulis. Folia longe-petiolata membranacea; lamina ca. 28 cm. longa medio ca. 15 cm. lata apicem versus ca. 1/4 longitudine bifida, segmentis late ovato-trigonalibus late acutis; petiolo 19 cm. longo evaginato. Pedunculus 5 cm. longus prope medium 2 nodiis

bractealibus (bracteis deciduis). Spadix in fructu globosus ca. 2.0–2.5 cm. diam.; floribus femineis sat magnis concrescentibus ca. 0.8 cm. diam., stigmatibus sessilibus, lobis perigonialibus depressis stigmata vix aequantibus.—SAN BLAS: high hills back of Puerto Obaldía, alt. 50–200 m., Aug., 1911, *Pittier 4312* (U. S. Nat. Herb., TYPE).

This species is conspicuous amongst the Central American Carludovicas because of its broad, scarcely divided leaves, recalling those of *C. latifrons* Drude of Brazil. The latter, however, has more deeply divided leaves of a different shape, and the stigmas are supported by rather slender styles.

CARLUDOVICA ROTUNDIFOLIA Wendl.—CHIRIQUÍ: Quebrada Velo, Volcán de Chiriquí, alt. 1800 m., July 8, 1940, *Woodson & Schery 248*; vicinity of Bajo Chorro, alt. 1900 m., July 20-22, 1940, *Woodson & Schery 675*. Originally described from Costa Rican plants grown at Kew. *C. rotundifolia* has usually been regarded as a synonym of the widespread *C. palmata* R. & P., but it probably should be maintained from the latter on the basis of the more elongate fruiting perigonial lobes and foliaceous outer spathes of the inflorescence.

COMMELINACEAE

COCHLIOSTEMA ODORATISSIMUM Lem.—BOCAS DEL TORO: Isla Lobo, Chiriquí Lagoon, Sept. 6, 1941, *H. von Wedel 2627*. "Wercklé has published the following statement: 'In the mountains south of Turruvares a gigantic *Cochliostema* is abundant, and covers the thick trunks of trees. It is a very beautiful epiphyte.' He reports it also from the Cordillera de Dota, as a plant 2 meters in height. The genus is known only from Ecuador, but probably it is represented also in Costa Rica." [Standl. Fl. Costa Rica, p. 163. 1937]. This is one of the most interesting discoveries in Panama during recent years, and it comes as a distinct surprise, also, to find it growing so near sea-level, instead of in the mountains where it might have been expected. Although the species is so infrequently collected that I have not been able to compare our plant with other herbarium specimens from South America, the determination appears to be established by reference to the numerous published icones. Of *C. odoratissimum*, Sir J. D. Hooker wrote: "This superb plant certainly ranks amongst the grandest stemless Monocotyledons known, combining the foliage of a gigantic *Anthurium* with masses of inflorescence which, for size, delicacy, and beauty of tints, cannot well be surpassed." [Bot. Mag. *pl. 5705*. 1868.]

LILIACEAE

ECHEANDIA **prolixa** Woodson, sp. nov. Herbae perennes 6–10 dm. altae omnino glabrae; rhizoma brevi recta; radicibus multis carnosis tuberos elongato-fusiformes gerentibus. Folia plurima radicalia late linearia 60–95 cm. longa ca. 2 cm. lata, caulina 1–2 minora. Inflorescentia prolixa plus minusve procumbens paniculato-racemiformis; ramis 3–6 saepissime 2–4 ex axilla unica; bracteis scariaceis minimis. Flores parvi in fasciculis aggregati; pedicellis 1.0–1.5 cm. longis sub medio articulatis; perianthii segmentis anguste oblongo-linearibus 1.0–1.2 cm. longis ca. 0.1 cm. latis albis patulis; staminis antheris oblongo-sagittatis 0.6 cm. longis, filamentis rugosis aequilongis. Capsulae trigone obovoideo-oblongoideae apice truncatae vel leviter emarginatae basi attenuatae 0.7–0.8 cm. longae ca. 0.4 cm. latae.—PANAMÁ: vicinity of Bejuco, alt. about 20 m., Sept. 7, 1942, *P. H. Allen 2962* (Herb. Missouri Bot. Gard., TYPE). "Common weedy herb growing in lax clumps on rocky hilltops. Inflorescence weakly procumbent in most cases. Flowers white with yellow stamens."

This species is conspicuous amongst described Echeandias because of its rank growth. It is most nearly allied to *E. macrophylla* Rose, but material of that species which is available for study shows plants which are smaller in general stature, with anthers about 1 cm. long and filaments about 0.6 cm. long, as well as broader almost exactly ovoid capsules. The genus *Echeandia* has previously been known only from southern Mexico and northern Central America, with the exception of a single specimen (*Fendler 1549*) from northwestern Venezuela which possibly represents *E. prolixa.* An additional *Echeandia* is known from western Panama:

ECHEANDIA **venusta** Woodson, sp. nov. Herbae perennes ca. 3–4 dm. altae omnino glabrae; rhizoma brevi recta; radicibus multis carnosis. Folia plurima radicalia late linearia 12-30 cm. longa 1.0–1.5 cm. lata multinervia albomarginata, caulina 1–2 multo minora. Inflorescentia racemiformis saepissime simplex; floribus in fasciculis aggregatis vel solitariis; bracteis exterioribus valde foliaceis spathaceis 2–7 cm. longis; pedicellis 1.5–2.0 cm. longis sub medio articulatis; perianthii segmentis aureis nervis 3 nigris oblongo-ellipticis 1.5–2.0 cm. longis 0.4–0.5 cm. latis; staminis antheris anguste oblongo-sagittatis ca. 0.6 cm. longis, filamentis 0.5 cm. longis rugoso-crispatis.—CHIRIQUÍ: Potrero Muleto, Volcán de Chiriquí, alt. 3500 m., July 13, 1940, *Woodson & Schery 379* (Herb. Missouri Bot. Gard., TYPE).

E. venusta is closely related to the group of rather dubious species centering about *E. reflexa* (Cav.) Rose, but differs from all in its conspicuously spathaceous bracts and somewhat larger flowers with longer pedicels. The species was very abundant at the type locality, and as charming as a planned floral display; it is well worthy of cultivation in northern greenhouses.

SMILACACEAE

(C. V. Morton[1])

SMILAX **chiriquensis** Morton, sp. nov. Liana 7.5 m. longa, caulibus conspicue et argute quadrangularibus, pallide lutescentibus, glabris, parce aculeatis, aculeis rectis vel curvatis, basi latis; petioli elongati, usque ad 6 cm. longi, glabri, medio vel supra medium articulati; laminae foliorum ovatae, usque ad 19 cm. longae et 12 cm. latae, apice breviter apiculatae, majores basi cordatae, minores basi truncatae, omnes integrae, non lobatae, papyraceae, pallide virides, glabrae, 9-nerviae, nervis extimis marginalibus, venis secundariis perspicue reticulatis, utrinque elevatis; umbellae masculae in ramis axillaribus brevibus foliis suffultis, vel foliis valde reductis umbellis pseudoracemosis; pedunculus 1–3 cm. longus, glaber, complanatus, quam petiolus longior; receptaculum parvum; pedicelli 5–11 mm. longi, glabri; perianthium viride, segmentis linearibus, 8–9 mm. longis, ca. 1.5 mm. latis, recurvis, glabris; filamenta gracilia, ca. 6 mm. longa, antheris parvis, ca. 1.5 mm. longis; flores feminei ignoti.—CHIRIQUÍ: valley of the upper Río Chiriquí Viejo, March 22, 1940, *Peggy White 348* (U. S. Nat. Herb., no. 1,791,114, TYPE); same locality, April 3, 1938, *Gene White 59*; Bajo Mona, Boquete, alt. 1350 m., April 2, 1938, *M. E. Davidson 478*.

This species belongs to the section Hispidae of the revision of Killip and Morton. It may be distinguished from all the continental American species of that group by its sharply quadrangular stems, large, long-petioled leaves, large flowers, and minute anthers. The Davidson specimen was distributed as *S. Regelii* Killip & Morton, to which it is not closely allied. *S. Regelii* has the perianth segments only 3.5–5 mm. long (rather than 8–9 mm., as in *S. chiriquensis)* and the anthers are longer than the very short (1.2 mm.) filaments. In *S. chiriquensis* the anthers are very small, much shorter than the elongate filaments, these about 6 mm. long.

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DIOSCOREACEAE

(C. V. Morton)

DIOSCOREA STANDLEYI Morton—CHIRIQUÍ: vicinity of Bajo Chorro, alt. 1900 m., July 20-22, 1940, *Woodson & Schery 652* and *664*. Previously known from Costa Rica.

IRIDACEAE

NEOMARICA CAERULEA (Ker-Gawl.) Sprague—BOCAS DEL TORO: Little Bocas, July 16, 1941, *H. von Wedel 2546*. This species occurs naturally from the Guianas to southern Brazil, according to J. G. Baker (Handb. Irid.). Out of this range, it has been cited from cultivation in highland Costa Rica by Standley (Fl. Costa Rica). Consequently, whether the species is indigenous or an escape is open to question, although Mr. von Wedel usually is careful to limit his collections to apparently indigenous plants. The plant resembles a gigantic *Sisyrinchium* with scapes 1.5–2 m. tall and violet-blue flowers 5–6 cm. in diameter.

MUSACEAE

HELICONIA PSITTACORUM L.f. *(H. hirsuta* L.f. Suppl. 158. 1781; *H. cannoidea* L.Rich. Nova Acta Acad. Nat. Cur. **15**, suppl.: *pls. 9–10.* 1831; *H. aurantiaca* Ghiesbreght ex Lem. Ill. Hort. *pl. 332.* 1862; *H. straminea* (Griggs) Standl. Fl. C. Z. 75. 1928).—Unless one shares the rather naive faith in the constancy of *Heliconia* species suggested by some recent authors, one must assume great complexity for this species, particularly with regard to such characters as length of the peduncle and color of bracts and flowers. Fortunately, the species is common in Panama, and has been collected abundantly. *H. psittacorum* and *H. hirsuta* were published in the same work by the younger Linnaeus (Suppl. 158. 1781), and since they have not been combined previously, I am adopting the former as more expressive of the aspect of the plants.

HELICONIA ROSTRATA R. & P. (*H. pendula* Wawra, Oesterr. Bot. Zeitschr. **13**: 8. 1861; *H. curtispatha* Petersen in Mart. Fl. Bras. **3**^{3}: 15. 1890; *H. longa* Griggs, Bull. Torrey Club **31**: 446. 1904).—It is difficult to see why modern authors have failed to recognize the essential similarity of the plants bearing these names to the suggestive illustration published by Ruiz and Pavon (Fl. Peruv. **3**: *pl. 305.* 1802).

HELICONIA SUBULATA R. & P. Fl. Peruv. **3**: *pl. 303.* 1802. (*H. acum-*

inata L. C. Rich. Nova Acta Acad. Nat. Cur. **15**, suppl.: *pl. 11.* 1831; *H. psittacorum* L. f. var. β. *subulata* (R. & P.) Baker, Ann. Bot. **7**: 199. 1893).—A thoughtful interpretation of the illustrations, crude as they are, makes their association as synonyms quite inescapable for me.

HELICONIA VELLERIGERA Poeppig, Reise Chile **2**: 295. 1836; Peters. in Mart. Fl. Bras. **3**^{3}: 18. 1844; K.Sch. in Engl. Pflanzenreich **4**^{45}: 37. 1900. *(Bihai vellerigera* (Poeppig) O.Ktze. Rev. Gen. **2**: 685. 1891; Griggs, Bull. Torrey Club **4**^{2}: 318. 1915).—COCLÉ: El Valle de Antón, *Woodson & Schery 205, Allen 1818;* Las Minas, *Allen 2707;* PANAMÁ: Río Boquerón, *Hunter & Allen 659.* This is one of the most striking species of *Heliconia,* attaining a height of 3 meters, the long inflorescences pendulous and clothed with very dense and brilliantly ferruginous hairs about 1 cm. long (the brilliant scarlet bracts and upper peduncle occasionally somewhat glabrate).

The identification of the Panamanian plants with Poeppig's has not been entirely an easy matter, although a guiding principal in our dealings with highland Panamanian plants has been liberal consultation of the disused species of Peru enumerated by Ruiz & Pavon and Poeppig. The complicating factor in this instance was that *H. vellerigera* is not represented by exsiccatae in American herbaria which we have consulted, and was known to Poeppig, Petersen, and Schumann only from a fragment of an inflorescence in the herbarium at Vienna. Schumann undertook to key the species from others on the basis of a supposedly erect inflorescence, which was repeated by Griggs. Nevertheless, we were struck with the fact that both Petersen and Schumann took pains to describe the indument of the inflorescence as "*pili. .ad 1 cm. longi*" amplified by the former by the remark, "*Species incomplete cognita, sed vellere ad omnibus ceteris Heliconiis distinctissima,*" and we hopefully labelled our Panamanian specimens as *H. vellerigera.*

Faith in our rather intuitive use of the early Peruvian authors has recently been vindicated in this case by examination, through the kindness of Dr. Standley, of two photographs of *H. vellerigera* from Peru; one specimen, the type of Poeppig, preserved in the herbarium at Vienna, and the other, a recent collection *(Weberbauer 6764)* in the herbarium at Berlin. There can be scarcely a shadow of doubt that the plants of Panama and those of Peru are quite conspecific. Unfortunately, the label of Weberbauer's plant does not indicate whether the inflorescence was erect or pendulous, but the latter almost certainly must have been the case.

HELICONIA VILLOSA Kl. (*Heliconia nutans* Woods. Ann. Missouri Bot. Gard. **26**: 276. 1939).—CHIRIQUÍ: Volcán de Chiriquí, alt. 1500–2000 m., *Woodson, Allen & Seibert 968*; COCLÉ: north of El Valle, alt. 1000 m., *Allen 2167*. Intensive study of the Panamanian Heliconias has convinced me of the folly of continuing the tenuous specific distinctions current at present. The species undoubtedly are extremely variable in all but the most conservative criteria, and hybridization may be suspected in several instances. The specimens cited above agree in all essential particulars with the original description of *H. villosa* and the illustration by Petersen in the 'Flora Brasiliensis' (**3**^{3}: *pl. 4.* 1890). Particularly is this true with regard to the specimen from the Province of Coclé. The type of *H. nutans* (*Woodson, Allen & Seibert 968*) is merely a specimen with somewhat more numerous and smaller bracts. The indument is rather variable, and nearly glabrous specimens have been observed, particularly in the northern range of the species which appears to extend as far as Honduras.

ZINGIBERACEAE

RENEALMIA (*Scaposae-Racemosae*) **Arundinaria** Woods. sp. nov. Herba gracillima omnino glabra. Culmi foliiferi gracillimi 3–4 dm. alti. Folia longiuscule (0.5–1.0 cm.) petiolata angustissime oblongo-lanceolata basi apiceque attenuata 7–15 cm. longa 1.0–1.7 cm. lata superne minora; ligula angusta 3–6 cm. longa truncata vel obscure auriculata purpureo-marginata. Panicula racemiformis pauciflora; culmis gracillimis 5–7 cm. longis, vaginis ca. 5–6 oblongo-ovatis obtusis 1.25–1.5 cm. longis membranaceis; pedunculis 2.5–3.0 cm. longis 8–12-floris; bracteis ovatis vel ovato-lanceolatis 0.5–0.7 cm. longis pallide roseis. Flores ignoti. Capsula ovoidea 0.6–0.7 cm. longa coccinea; calyce anguste turbinato ca. 0.5 cm. longo; pedicello ca. 0.5 cm. longo.—DARIÉN: foothills of Garagará, Sambú basin, southern Darién, alt. 30–500 m., Feb., 1912, *Pittier 5597* (U. S. Nat. Herb., TYPE; Gray Herb., ISOTYPE).

Because of its narrow, grass-like leaves and short, few-flowered racemiform inflorescences, this species does not coincide with any other previously published with which I am familiar.

COSTUS FRIEDRICHSENII O. G. Peters. Bot. Tidsskr. **18**: 260. 1893. —This name should apply to the plants assigned to *C. argenteus* R. & P. in the third of this series (Ann. Missouri Bot. Gard. **26**: 277. 1939), as a result of my perhaps overly zealous eagerness to resuscitate the disused species of the 'Flora Peruviana.' The illustration

by Ruiz and Pavon certainly bears great similarity to our plants. Since the publication of my note, however, I have received for identification a Bolivian specimen (*Krukoff 10489*) which agrees even better with the illustration and which has such a strikingly distinctive silvery indument that Ruiz and Pavon's epithet is the involuntary one to describe it. Most fortunately, about the same time I received on loan the type specimen of *C. Friedrichsenii* from Berlin. The latter undoubtedly is the plant from Panama so frequently confused with *C. villosissimus*.

COSTUS LAEVIS R. & P. Fl. Peruv. **1**: 3. 1798 (*C. giganteus* O. Ktze. Rev. Gen. **2**: 687. 1891, non Ridl.; *C. maximus* K. Sch. in Engl. Pflanzenreich, **4**[46]: 405. 1904; *C. splendens* Donn. Sm. et Tuerckh. Bot. Gaz. **32**: 260. 1902; *C. Skutchii* Morton, Jour. Wash. Acad. Sci. **27**: 306. 1937).—The identification of this name of Ruiz and Pavon with the magnificent plants of Panama and southern Central America is made through an examination of the type specimen in the herbarium at Madrid and notes kindly supplied by Dr. Loesener of Berlin.

COSTUS RUBER Griseb. Cat. Pl. Cub. 256. 1866 (*C. formosus* Morton, Jour. Wash. Acad. Sci. **27**: 305. 1937; *C. spicatus* Jacq. according to many authors; *C. spiralis* (Jacq.) Roscoe, according to K. Sch. in Engl. Pflanzenreich, **4**[46]: 400. 1904).—CHIRIQUÍ: Puerto Armuelles, alt. 0–75 m., *Woodson & Schery 857*; San Bartolomé, *Woodson & Schery 886*; COCLÉ: El Valle, alt. 800–1000 m., *Allen 1825*; CANAL ZONE: Gold Creek, *Seibert 584*; Barro Colorado Isl., *Woodson & Schery 993*; DARIÉN: Pinogana, alt. 20 m., *Allen 938*. The identification of these plants with *C. ruber* is made quite positive by an examination of *Wright 1514*, from eastern Cuba, cited by both Grisebach and Schumann. The species is one of the most attractive and frequent of southern Central America, well characterized by its ordinarily red flowers and bracts, the latter with margins densely ciliate, and rather large obovate or oblanceolate leaves. It is difficult to understand how Schumann was able to harmonize *C. ruber* as represented by *Wright 1514* with Roscoe's excellent illustration of *C. spiralis* (Monandr. Pl. *pl. 79.* 1828), which shows with particular detail the characteristic obovate-oval leaves with subcordate-auriculate base of the latter. In addition, *C. spiralis* is quite glabrous in all parts.

COSTUS SCABER R. & P. Fl. Peruv. **1**: 2. *pl. 3.* 1798.—COCLÉ: near Cerro Turega, 650–700 m., *Woodson & Schery 202*; PANAMÁ: hills above Campana, 600–800 m., *Allen 1873*. Our plants agree closely

with a photograph of the type specimen in the Madrid herbarium, and with the published illustration. I believe that this species extends to the Chiriquí region, and probably hybridizes with *C. nutans* K. Sch. throughout its range.

COSTUS SPIRALIS (Jacq.) Roscoe, Monandr. Pl. *pl. 79.* 1828.—BOCAS DEL TORO: Old Bank Island, Chiriquí Lagoon, *H. von Wedel 2000*; Isla Colón, *von Wedel 2939*; Isla Bastimentos, *von Wedel 2899.* These specimens agree strikingly with Roscoe's illustration, particularly with regard to the leaf shape, as has been discussed in a preceding paragraph.

CANNACEAE

CANNA FLACCIDA Salisb.—BOCAS DEL TORO: Isla Colón, March 30, 1940, *H. von Wedel 78.* A new record for Central America. Previously known to occur in coastal South Carolina, Georgia, and Florida; also in Cuba and Hispaniola. The islands of the Chiriquí Lagoon apparently contain numerous Antillean elements.

CANNA GLAUCA L.—BOCAS DEL TORO: Old Bank Island, Chiriquí Lagoon, Feb. 5, 1941, *H. von Wedel 2001.* Apparently the first record for Central America. Previously known to occur in the Antilles, the Guianas, and northern Colombia.

MARANTACEAE

CALATHEA VILLOSA Lindl. Bot. Reg. **31:** *pl. 14.* 1845 (*C. hirsuta* Standl. Jour. Wash. Acad. Sci. **15:** 4. 1925).—This correction serves to re-emphasize by so much the affinities of the Panamanian flora for that of northeastern South America.

CALATHEA (*Pseudophrynium-Scapifoliae*) **Allenii** Woods. sp. nov. Planta 1 m. alta. Folia longiuscule petiolata; lamina oblongo-elliptica basi rotundata apice abrupte subcaudato-acuminata 20–45 cm. longa 8–15 cm. lata supra nervo medio excepto glabra subtus nervo medio praecipue minute puberula, petiolo ad 25 cm. longo pilosulo parte superiore ad 5 cm. callosa tereti, vagina ad 10 cm. longa 4 cm. lata dorso margineque pilosulis. Spica late fusiformis 11–13 cm. longa 3.0–3.5 cm. crassa sessilis vel pedunculo dense pilosulo ad 4 cm. longo, bracteis (ca. 20–25) dense imbricatis oblongis inferne late ovalibus apice late rotundato-emarginatis frequenter cuspe minuto ad medium munitis 5.0–5.5 cm. longis 1.5–3.5 cm. latis luteis marginibus apiceque praecipue pilosulis glabratisve. Flores ascendentes fasciculati bracteolis oblongo-linearibus ad 4 cm. longis; ovario ca. 0.4 cm. longo apice villoso; sepalis anguste

oblongo-lanceolatis acutis ca. 3 cm. longis glabris; corolla lutea extus minute sparseque pilosula, tubo angustissimo ca. 3.5 cm. longo, lobis staminodioque ca. 1.0–1.3 cm. longis.—PANAMÁ: summit of Cerro Campana, alt. 800–1000 m., Sept. 1, 1940, *P. H. Allen 2218* (Herb. Missouri Bot. Gard., TYPE).

The rather narrowly fusiform, sessile or very shortly pedunculate spikes of this species are very distinctive, as are the peculiarly emarginate bracts.

CALATHEA ALLOUIA (Aubl.) Lindl. Bot. Reg. **14**: sub *pl. 1210.* 1828. (*Maranta Allouia* Aubl. Hist. Pl. Guian. **1**: 3. 1775; *C. grandifolia* Lindl. Bot. Reg. **14**: *pl. 1210.* 1827; *Phrynium cylindricum* Roscoe, Monandr. Pl. *pl. 40.* 1828; *Calathea cylindrica* (Roscoe) K. Sch. Engl. Pflanzenreich, **4**[48]: 83. 1902; *C. macrosepala* K. Sch. loc. cit. 84. 1902).—After intermittent consideration for several years, I have come to the firm conviction that the showy plants of southern Central America and northern South America usually identified as *C. violacea* (Rosc.) Lindl. and *C. macrosepala* K. Sch. are quite conspecific and represent merely minor varieties with blue or pale yellow varieties respectively; nor is there much doubt in my mind that Aublet's name should be applied to them. Upon numerous occasions I have collected the two varieties growing intermixed, and Mr. Allen has confirmed my observations independently. The typical variety is that with the pale yellow flowers; that with blue flowers may be indicated as follows:

CALATHEA ALLOUIA (Aubl.) Lindl. var. **violacea** (Roscoe) Woods., comb. nov. *(Phrynium violaceum* Roscoe, Monandr. Pl. *pl. 37.* 1828).

CALATHEA *(Pseudophyrnium-Scapifoliae)* **foliosa** Rowlee, sp. nov. Planta submetralis et humilior. Folia folio 1 caulino excepto sub pedunculo ca. 7–10 dense rosulata, lamina oblongo-lanceolata apice breviter acuminata basi obtusa ad 32 cm. longa 8 cm. lata nervo medio subtus minute puberulo caeterum glabra, petiolo 1 cm. longo tota longitudine calloso, vagina angusta obtusa 15–20 cm. longa glabra. Spica globosa ca. 6 cm. diametro, pedunculo ca. 9 cm. longo glabro, bracteis ca. 25 plus minusve imbricatis late ovatis breviter acuminatis 2–3 cm. longis extus intusque dense tomentellis. Flores ut videntur gilvi fasciculati; ovario glabro; sepalis lanceolatis 3 cm. longis; corollae tubo 1.5 cm. longo lobis ellipticis 1 cm. longis staminodio elliptico 0.7 cm. longo.—BOCAS DEL TORO: Farm 6, near Almirante, Sept. 23, 1920, *N. W. Blair 1016* (U. S. Nat. Herb., TYPE).

This manuscript species of the late Prof. Rowlee appears to be most closely related to *C. indecora,* described in a previous paragraph of this report. The lower stature, acuminate bracts, and particularly the rosulate leaves render it distinctive. Rosulate cauline leaves have been reported previously for the genus in *C. Pearcei* Rusby, of Bolivia, with which *C. foliosa* can claim little close relationship.

CALATHEA (*Pseudophrynium-Scapifoliae*) **indecora** Woods., sp. nov. Planta valida 2.0–2.5 m. alta. Folia longe petiolata, lamina oblongo-elliptica basi rotundata apice breviter acuminata 40–65 cm. longa 14–22 cm. lata supra nervo medio puberulo caeterumque glabra subtus minute puberula, petiolo 20–45 cm. longo minutissime pilosulo parte superiore ad 4 cm. longa callosa tereti dense papillata, vagina 11–20 cm. longa haud auriculata. Spica late ovoidea 5–8 cm. longa, pedunculo valido 10–18 cm. longo superne puberulo, bracteis (ca. 15–30) latissime ovatis subrotundatis ca. 2 cm. longis latisque pallide viridibus dense pilosulis ad anthesim laceratis laxe patulis. Flores ad anthesim patuli; ovario 0.2 cm. longo glabro; sepalis anguste oblongis acutis 2 cm. longis glabris superne minutissime pilosulis; corollae lacteae glabrae tubo angustissimo ca. 2 cm. longo, lobis obovato-ellipticis 1.5 cm. longis, staminodio 1 cm. longo.—BOCAS DEL TORO: Isla Colón, Aug. 15, 1940, *H. von Wedel 476* (Herb. Missouri Bot. Gard., TYPE); Old Bank Island, Feb. 15, 1941, *von Wedel 2102*; Isla Colón, Oct. 18, 1940, *von Wedel 1229*; Water Valley, Sept. 11, 1940, *von Wedel 712.*

Dr. Schery and I were with Mr. von Wedel when the type specimens were collected in fairly low woods on Isla Colón. On the basis of dried plants alone I might otherwise have been deceived into identifying them as somewhat anomalous specimens of *C. Allouia,* with which it is doubtless closely related. The fine stand of plants that we saw, however, did not at all recall that species, so distinctive were they. *C. indecora* is a much taller, stouter plant, and the aspect of the spikes, with their roughly reflexed and spreading bracts and flowers, from which the specific adjective is derived, is quite distinctive amongst the species of the subgenus Pseudophrynium with which I am familiar.

CALATHEA (*Pseudophrynium-Scapifoliae*) **lagunae** Woods. sp. nov. Planta submetralis. Folia brevissime petiolata, lamina late rarissime anguste oblongo-elliptica non raro ovali 11–45 cm. longa 7–12 cm. lata utrinque glabra, petiolo 1.5–6.0 cm. longo tota longitudine calloso minute papillato, vagina 6–15 cm. longa obtusa haud

auriculata glabra. Spica ovoidea 3–6 cm. longa, pedunculo 10–17 cm. longo superne excepto glabro, bracteis ca. 10–15 imbricatis subreniformi-ovatis latissime obtusis vel rotundatis 1–2 cm. longis luteis praecipue basi dense pilosis. Flores ad anthesim ascendentes; ovario 0.2 cm. longo glabro; sepalis oblongo-ovalibus obtusis 2 cm. longis glabris; corollae albae glabrae tubo angusto 2 cm. longo, lobis late ellipticis 1.5 cm. longis, staminibus staminodioque ca. 1 cm. longis.—BOCAS DEL TORO: Western River, Sept. 19, 1941, *von Wedel 2706* (Herb. Missouri Bot. Gard., TYPE); Isla Colón, Oct. 23, 1940, *von Wedel 1328*.

Most closely related to *C. picta* Hook. f. (Bot. Mag. *pl. 7674.* 1899) of previously published species. This Brazilian species, published from a plant cultivated at Kew, however, is stated to be glabrous in all parts, and other discrepancies might be added.

CALATHEA MICROCEPHALA (Poepp. & Endl.) Koernicke, Bull. Soc. Nat. Moscow **35**[1]: 125. 1862 (*Phrynium microcephalum* Poepp. & Endl. Nov. Gen. & Sp. **3**: 20. *pl. 128, figs. a-b.* 1838; *Maranta micans* Mathieu, Cat. 1853; *C. micans* (Mathieu) Koernicke, loc. cit. 126. 1862; *C. albicans* Brongn. ex K. Sch. in Engl. Pflanzenreich **4**[48]: 112. 1902).—I have taken the opportunity to study this species upon several collecting trips to Panama, and have found it to be quite variable in all the key characters used by Petersen and Schumann to separate *C. microcephala, C. micans,* and *C. albicans,* notably height of plant, shape and size of leaves, and color of staminodia. Biologically speaking, I feel quite confident that a single species is represented.

CALATHEA PICTA Hook. f. Bot. Mag. *pl. 7674.* 1899.—COCLÉ: north of El Valle, alt. 1000 m., *Allen 2331*; PANAMÁ: summit of Cerro Campana, alt. 800–1000 m., *Allen 2219.* Mr. C. V. Morton and I can find no characters to separate Mr. Allen's specimens from the illustration of *C. picta.* This is somewhat embarrassing, since the species previously has been known only from a plant, supposedly from Brazil, which was cultivated at Kew.

STROMANTHE LUTEA (Jacq.) Eichl. Abhandl. Akad. Berlin **1882**: 81. 1883. (*Maranta lutea* Jacq. Collect. **4**: 117; Icon. *pl. 201.* 1794; *Myrosma Guapilesense* Donn. Sm. Bot. Gaz. **23**: 251. 1897).—I have been unable to distinguish Capt. Smith's species, ranging from Guatemala to Panama, from that of Jacquin, which occurs in Colombia, Venezuela, and northern Brazil. The former was overlooked by Schumann in his account of Marantaceae for the 'Pflanzen-

reich.' The problem of whether our plant is a *Myrosma* or a *Stromanthe* as applied by Schumann resolves largely into a question of whether the leaves are "antitropic" or "homotropic." This distinction of Eichler appears to me as extremely deceptive, if not artificial, as is shown by Schumann's rearrangement of Eichler's species amongst the same genera, upon the same criterion. I am inclined to disregard this dubious character in favor of others more easy to apply. From the same standpoint, I feel that *Stromanthe Tonckat* (Aubl.) Eichl. is very much better left in *Maranta* where it was placed by Aublet since its entire aspect and structure, exclusive of "homotropic" or "antitropic" orientation of the leaves, is indelibly suggestive of *M. arundinacea* L. *M. Tonckat* has been reported in Costa Rica, and is to be expected in Panama as well.

Myrosma **dasycarpa** (Donn. Sm.) Woods., comb., nov. (*Calathea dasycarpa* Donn. Sm. Bot. Gaz. **31**: 123. 1901; *Ctenanthe dasycarpa* (Donn. Sm.) K. Sch. in Engl. Pflanzenreich, **4**[48]: 153. 1902).—I can scarcely call myself an authority on Marantaceae, and feel a becoming sense of modesty in contradicting the generic concepts of an authority of Dr. Schumann's calibre. Nevertheless, I feel very strongly that several of his generic conceptions amongst the Marantaeae in the 'Pflanzenreich' are extremely impractical. Foremost of these, as I have remarked in a previous paragraph, is the distinction between "homotropic" and "antitropic" leaves, of which Schumann even was somewhat wary (Pflanzenreich, loc. cit.). I do not have a large collection of living Maranteae available for observation; but whatever the situation in life, the leaf character is entirely inapplicable in the herbarium, and I am unwilling to perpetuate it in the 'Flora of Panama.' Therefore I am considering *Ctenanthe* Eichl. as a synonym of *Myrosma* L. f. I am not aware of any valid morphological characters to distinguish them.

Ischnosiphon **Pittieri** (Rowlee) Woods., comb. nov. (*Pleiostachya Pittieri* Rowlee, ex Standl. Jour. Wash. Acad. Sci. **15**: 5. 1925).—Since I have made a start toward reforming the genera of Marantaceae as represented in the microcosm of Panama, the job might as well be made consistent. *Pleiostachya* has no observable distinction from *Ischnosiphon* save the compression of the bracts, as far as I am aware; other morphological characters appear to be fairly coherent. Fortunately, the other species currently treated as Pleiostachyas are both provided with combinations in *Ischnosiphon*: *I. pruinosus* (Reg.) Peters., and *I. Morlaei* Eggers.

BURMANNIACEAE

APTERIA APHYLLA (Nutt.) Barnhart—BOCAS DEL TORO: Old Bank Island, Feb. 17, 1941, *H. von Wedel 2111.* Previously known to occur from the southeastern United States to Bolivia.

ORCHIDACEAE

(Louis O. Williams)

HABENARIA MONORRHIZA (Sw.) Reichb. f.—COCLÉ: moist roadside banks, dry hills south of El Valle de Antón, alt. 600–800 m., flowers white, Nov. 13, 1941, *Allen 2771.* A not uncommon species found from Guatemala through Central America, south to Peru and in the West Indies. Apparently not reported for Panama.

SOBRALIA **Allenii** L. O. Williams, sp. nov. (pl. 30, figs. 1–3). Plantae caespitosae, epiphyticae, usque ad 5 dm. altae. Folia elliptico-lanceolata vel anguste elliptica, acuminata, plicata, 7-nervia. Inflorescentia terminalis, uniflora. Sepalum dorsale oblanceolatum, apiculatum. Sepala lateralia lineari-oblonga, apiculata. Petala oblanceolata, acuta, serrulata. Labellum oblongo-ovale, truncatum vel leviter retusum, lacerato-dentatum; discus carinis et callo bipartito ornatus, pubescens. Columna generis.

Caespitose epiphytic plants up to about 5 dm. tall. Stems about 1–2 mm. in diameter, slender, bearing 1–3 leaves toward the apex, leafless below or the leaves reduced to sheaths. Leaves 13–18.5 cm. long, 1.8–2.5 cm. broad, elliptic-lanceolate to narrowly elliptic, acuminate, plicate, with 7 principal nerves, lepidote on the lower surface especially along the nerves at the base, glabrous above or essentially so; leaf-sheaths closely appressed to the stem, lepidote. Inflorescence terminal, 1-flowered, flowers small, white with a pale yellow lip. Dorsal sepal about 3.5 cm. long, 7 mm. broad, oblanceolate, apiculate, 7-nerved. Lateral sepals about 3.5 cm. long, 7 mm. broad, linear-oblong, apiculate, 7-nerved. Petals about 3.5 cm. long, 6–7 mm. broad, oblanceolate, acute, terminal half serrulate, 7-nerved. Lip about 3.5 cm. long, 1.8 cm. broad, oblong-oval, truncate or shallowly retuse, terminal half lacerate-dentate; disc with several inconspicuous longitudinal carinae and with a small bipartite callus thickening at the base, pubescent longitudinally along the middle, especially toward the apex. Column of the genus, about 1.5 cm. long.—COCLÉ: epiphytic, trail to La Mesa, hills north of El Valle de Antón, alt. ca. 1000 m., (sepals and petals white, labellum pale yellow), Aug. 31, 1941, *Allen 2686* (Herb. Ames, TYPE).

Sobralia Allenii is most closely allied to *S. mucronata* A. & S. from which, however, it is distinguished by the pubescent lip which is lacerate-dentate in the terminal half. The leaf-sheaths and leaves of *S. Allenii* are lepidote, while those of *S. mucronata* are glabrous or essentially so.

Description and illustration from a dried specimen and a flower in liquid.

SOBRALIA DECORA Batem. var. **aerata** Allen & Williams, var. nov. (pl. 31). E specie planta parviore et floribus aeratis differt.—COCLÉ: bad lands south of El Valle de Antón, alt. ca. 500 m., Sept. 18, 1941, (flowered in collection of A. M. Bouché, Pedro Miguel, C. Z.), *Allen 2755* (Herb. Ames, TYPE); ravines in bad lands south of El Valle de Antón, alt. ca. 600 m., (flowered in collection of Mr. and Mrs. Barrett, Bas Obispo, C. Z.), *Allen 2846*.

In the field this plant appears to be amply distinct from *Sobralia decora* Batem., but herbarium study indicates that it is perhaps only a variety. The plants average about 5 dm. tall while *S. decora* is commonly 2–2.5 m. tall. The flower color is quite distinctive: sepals greenish on the outer surfaces, very near Brick Red within; petals a washed Brick-Red with lighter margins and median line dorsally; lip Brick Red dorsally with a white median line and white margins, —the inner surface is very nearly Acajou Red with upper margins white and with an Amber Brown median stripe; the column is pure white. [Ridgeway colors]. The local name for this variety is "Bronze Sobralia," hence the varietal name, meaning "ornamented with bronze."

SPIRANTHES **navarrensis** (Ames) L. O. Williams, comb. nov. (*Stenorrhynchus navarrensis* Ames, Sched. Orch. **9**: 13, *t. 3*. 1925).—CHIRIQUÍ: cloud forest, Cerro Horqueta, alt. ca. 2000 m., (flowers yellow), June 2, 1940, *von Hagen & von Hagen 2111*. New to the flora of Panama, previously known from Costa Rica. Closely allied to *Spiranthes speciosa* (G. F. Gmel.) A. Rich.

SPIRANTHES **Woodsonii** L. O. Williams, sp. nov. Herbae palustres, terrestres, usque ad 5.5 dm. altae. Caules graciles, basi foliosi. Folia oblongo-elliptica vel ovalia, acuta vel obtusa. Sepalum dorsale lanceolatum, acuminatum. Sepala lateralia in mentum saccatum producta, lanceolata, acuminata, arcuata. Petala elliptica vel anguste oblanceolata, acuta acuminatave. Labellum lineari-oblongum, panduratum et caudatum, apice leviter expansum. Columna sectionis (§ Sarcoglottis).

Terrestrial, palustrine herbs from underground rhizomes, up to

5.5 dm. tall. Rhizome slender, rooting at most of the nodes, with scarious sheaths arising from the nodes. Stem slender, with well-developed leaves at the base which become bract-like above. Leaves 3–10 cm. long, 1.3–2.8 cm. broad, oblong-elliptic to narrowly oval, acute or obtuse, largest near the base of the stem and reduced to amplexicaul bracts above. Inflorescence up to 10 cm. long, congested in flower, becoming more open in fruit; bracts up to 4 cm. long, 1.6 cm. broad, lanceolate, acuminate, pubescent dorsally. Flowers large, similar to those of *S. acaulis*. Dorsal sepal 16.5–19 mm. long, 3.5–4 mm. broad, lanceolate, acuminate, 3–5-nerved, densely pubescent dorsally. Lateral sepals long-decurrent on the ovary, 35–40 mm. long from the apex to the base of the saccate mentum; free part 16.5–19 mm. long, 4–4.5 mm. broad, lanceolate, acuminate, arcuate, spreading, densely pubescent dorsally, 3–5-nerved. Petals 15–18 mm. long, 2–2.5 mm. broad, narrowly elliptic to narrowly oblanceolate, acute or acuminate, arcuate, adherent to the dorsal sepal, pubescent on the margins, the basal half ciliate. Lip 28–32 mm. long, 6–7 mm. broad (apical lobe), linear-oblong, caudate, somewhat expanded and pandurate, with two extremely pubescent, converging callus-ridges on the terminal third, the basal part densely pubescent and the remainder, except the glabrous apex, less pubescent, glabrous below except at the base; terminal lobe transversely oval or transversely rhombic; caudae about 5 mm. long, retrorse, fleshy but flattened. Column (free part) about 8 mm. long, pubescent at the base ventrally; rostellum oblong-lanceolate, obtuse, flattened. Ovary densely pubescent.—CHIRIQUÍ: vicinity of Boquete, alt. 1200-1500 m., (flowers pale green), July 24-26, 1940, *Woodson & Schery 753* (Herb. Ames, TYPE); in swampy meadows, Finca Lérida to Boquete, alt. ca. 1300-1700 m., (flowers pale yellowish green), July 8–10, 1938, *Woodson, Allen & Seibert 1148*.

Spiranthes Woodsonii is not very closely allied to any Central American species of the genus. It belongs in the section Sarcoglottis. The species is particularly distinctive in having a creeping underground rhizome or stem instead of the usual fascicle of fleshy roots. In flower structure *Spiranthes Woodsonii* approaches *S. acaulis* (J. E. Sm.) Cogn. *(S. picta* (Anders.) Lindl.) but in detail is amply distinct.

STELIS **Allenii** L. O. Williams, sp. nov. (pl. 32, figs. 1–3). Herbae caespitosae, epiphyticae, usque ad 4 dm. altae. Folia elliptica vel elliptico-ovalia, acuta vel obtusa. Inflorescentia elongata; bracteae ovato-lanceolatae, acutae vel acuminatae, infundibuliformes. Sep-

alum dorsale lanceolatum, acutum, cucullatum. Sepala lateralia connata, suborbiculari-ovata, acuta vel obtusa, cucullata et gibbosa. Petala late flabellata vel transverse ovalia. Labellum flabellatum, truncatum, apice callo transverso ornatum.

Large caespitose epiphytic herbs up to 4 dm. tall. Secondary stems 7–15 cm. long, 0.25–0.35 cm. in diameter, covered with 2 or 3 loose sheaths which soon disintegrate, shorter than the leaves. Leaves 10–19 cm. long, 3.5–7 cm. broad, elliptic to elliptic-oval, acute or obtuse, coriaceous, attenuated into a short petiole at the base. Inflorescence up to 30 cm. long, floriferous to the base, 1 or more borne from the apex of the stems (if more than 1 then presumably borne in different years); sheaths up to 2.5 cm. long, cucullate, ample; bracts 2–18 mm. long, reduced upward, ovate-lanceolate, acute or acuminate, infundibuliform. Flowers largest of the genus. Dorsal sepal 14–16 mm. long, 5–6 mm. broad, lanceolate, acute, 11–13-nerved, cucullate. Lateral sepals connate to their apices, together 10–12 mm. long and 8–10 mm. broad, suborbicular-ovate, acute or obtuse, cucullate and gibbous at the base, many-nerved. Petals about 1 mm. long, 1.5 mm. broad, broadly flabellate to transversely oval, the apex much thickened. Lip 0.75–1 mm. long, 1–1.4 mm. broad, about 0.75 mm. thick at the apex, flabellate, truncate, with a transverse callus at the apex of the lip,—very like the petals but slightly smaller.—COCLÉ: hills north of El Valle de Antón, alt. 800 m., (flowers nearly black), April 10, 1942, *Allen 2952* (Herb. Ames, TYPE).

Stelis Allenii is perhaps the most distinctive species of this difficult genus in Central America and seems to be the largest-flowered species of the genus. There are no near allies in Central America but the species seems to belong to Lindley's section Dialissa, a section with but a few species in the Andes.

STELIS **atrorubens** L. O. Williams, sp. nov. (pl. 32, figs. 4–8). Herbae epiphyticae, caespitosae, parvae, usque ad ca. 18 cm. altae. Folia petiolata; lamina elliptica vel elliptico-oblanceolata, obtusa. Inflorescentia densiflora, quam folia longiora. Sepala basi connata, rotata, triangularia, acuta. Petala suborbicularia, carnosa. Labellum obscure trilobatum, oblongum vel oblongo-ovale, carnosum.

Small caespitose epiphytic herbs up to about 18 cm. tall. Secondary stems 1.5–3.5 cm. long, slender, covered with sheaths. Leaves 6–9 cm. long, petiolate, much longer than the secondary stems; lamina about 4–6.5 cm. long, 0.5–1 cm. broad, elliptic to elliptic-oblanceolate, obtuse, fleshy; petiole 2–3 cm. long. Inflorescence up

to 15 cm. long, upper half more or less densely flowered; bracts about 2 mm. long, infundibuliform, acute, scarious. Sepals connate at the base, rotate, 2–2.5 mm. long, 1.5–2 mm. broad, triangular, acute, 3-nerved. Petals about 0.75 mm. long, 0.75 mm. broad, suborbicular, 1-nerved, the terminal part thickened, fleshy. Lip 1–1.5 mm. long, 0.5–0.6 mm. broad, obscurely 3-lobed, oblong or oblong-oval, basal part of the lip oblong, somewhat concave, fleshy, terminating into two small, suberect lateral lobes,—terminal lobe of the lip about 0.5 mm. long, suborbicular, strongly concave, fleshy.—COCLÉ: vicinity of El Valle, alt. 600–1000 m., Dec. 8, 1938, *Allen 1234;* hills north of El Valle de Antón, trail to Las Minas, (flowers maroon), Dec. 2, 1941, *Allen 2876* (Herb. Ames, TYPE).

Stelis atrorubens is allied to *S. montana* L. Wms., but differs in several details. The flower parts of *S. montana,* a species not previously illustrated, are figured in pl. 32, figs. 9–12, for comparison.

STELIS MONTANA L. Wms. in Ann. Mo. Bot. Gard. **27**: 272. 1942.—Figures of this distinctive and unusual species are given in pl. 32, figs. 9–12.

CRYPTOPHORANTHUS **lepidotus** L. O. Williams, sp. nov. (pl. 30, figs. 4–7). Herbae caespitosae, epiphyticae, usque ad ca. 17 cm. altae. Folia oblanceolata vel anguste obovata, obtusa vel acuta, coriacea, petiolata. Sepala basi et apice connata; sepalum dorsale oblongo-oblanceolatum, cucullatum, carnosum; sepala lateralia usque ad apicem connata. Petala late ovato-lanceolata, acuta vel acuminata. Labellum hastatum, unguiculatum; lamina verrucosa vel lepidota. Columna generis.

Caespitose epiphytic herbs up to about 17 cm. tall. Secondary stems 2–7 cm. long, 1–2 mm. in diameter, covered with 4–5 pergameneous, infundibuliform sheaths which soon disintegrate. Leaves oblanceolate to narrowly obovate, obtuse or acutish, coriaceous, contracted into a distinct petiole; lamina 3.5–10 cm. long; petiole 1–2 cm. long, conduplicate. Inflorescence a fascicle of 1–6 long pedunculate flowers at the apex of the secondary stem; the peduncle with 1–3 short infundibuliform sheaths. Sepals joined at the base and at the tip leaving a small opening between the dorsal and lateral sepals; dorsal sepal about 15–20 mm. long, 6–7 mm. broad, oblong-oblanceolate, strongly cucullate, fleshy, 7-nerved, ridged dorsally, the ridges verrucose; lateral sepals connate to their apices, about 12–18 mm. long and together 6–8 mm. broad, fleshy, each about 7-nerved, with verrucose ridges dorsally. Petals 5–6 mm. long, 2.5–3.5 mm. broad, broadly ovate-lanceolate, acute or acuminate,

3(–5)-nerved. Lip 5–6 mm. long, the lamina about 4 mm. long, 1.5–2 mm. broad, hastate, unguiculate, 3-nerved, verrucose or lepidote, with two longitudinal, lamellate calluses extending from the auricles to about the middle; auricles about 1 mm. long, retrorse, subulate; claw 1.5–2 mm. long, 1–1.5 mm. broad, verrucose-scurfy or lepidote toward its apex. Column of the genus.—COCLÉ: epiphytic, trail to Las Minas, hills north of El Valle de Antón, alt. ca. 1000 m., (lower sides of many of the leaves deep purple, flowers white with very heavy purple stripes), Sept. 1, 1941, *Allen 2718* (Herb. Ames, TYPE).

Cryptophoranthus lepidotus is apparently somewhat allied to *C. beloglottis* Schltr. from Ecuador but it is easily distinguished by the smaller, differently shaped leaves as well as by the details of the flowers. *Cryptophoranthus Endresianus* Kränzl. is not well described but the available record indicates that it differs from *C. lepidotus*. Kränzlin's monograph of *Cryptophoranthus* (in Fedde Repert. Beih. **34**: 220–232. 1925) omits several species of this genus published prior to the date of the monograph.

LEPANTHES LINDLEYANA Oerst. & Reichb. f.—This name has been taken up for a not-uncommon species of Costa Rica and Panama. Reichenbach illustrated the species but his illustration does not coincide too well with the plants referred here. The plant usually identified as *L. Lindleyana* has a name which seems to refer to it exactly, *Lepanthes chiriquensis* Schltr. In the original description of *L. Lindleyana* the petals are described as "Tepala dimidiata triangula angulo inferiori obtusata, ciliolata," and in the illustration the petals might be considered to fit this characterization rather loosely. The petals, if bipartite, have a large anterior lobe and no posterior lobe; the dorsal sepal is as broad as the combined laterals; the lip shows no apiculation or mid-lobe.

PLEUROTHALLIS **antonensis** L. O. Williams, sp. nov. Herbae caespitosae, epiphyticae, usque ad 3 dm. altae. Folia lanceolato-cordata vel late cordata, acuta vel acuminata, coriacea. Inflorescentia fasciculata, uni- vel pauciflora. Sepalum dorsale elliptico-obovatum, obtusum vel acutum. Sepala lateralia connata, ovata vel late ovata, obtusa vel acuta. Petala lineari-oblonga, acuta, serrulata, arcuata. Labellum unguiculatum; lamina cordata vel oblongo-cordata, denticulata; unguis brevis. Columna generis.

Caespitose epiphytic herbs up to about 3 dm. tall. Secondary stems slender, with one or two scarious sheaths at the base, naked above. Leaves 4–9 cm. long, 1.5–4.7 cm. broad, lanceolate-cordate to

broadly cordate (young leaves elliptic), acute or acuminate, coriaceous. Inflorescence a 1–several-flowered fascicle from the apex of the secondary stems, much shorter than the subtending leaves. Dorsal sepal 6–7.5 mm. long, 3–4 mm. broad, elliptic-obovate, obtuse or acute, 3-nerved. Lateral sepals connate to their apices, 5.5–7 mm. long, 4–5 mm. broad, ovate or broadly ovate, obtuse or acute, 6-nerved. Petals 3.8–4.5 mm. long, 0.6–1 mm. broad, linear-oblong, acute, serrulate, strongly arcuate, 1-nerved. Lip unguiculate; lamina 2.5–3 mm. long, 2–2.5 mm. broad, cordate to oblong-cordate, denticulate, fleshy, the surface obscurely verrucose or smooth, with a small central cavity near the base; claw short. Column about 1 mm. long.—COCLÉ: hills north of El Valle de Antón, alt. ca. 1000 m., (flowers light brown), July 23, 1940, *Allen 2156;* same locality, July 14, 1940, *Allen 2194;* same locality, Nov. 21, 1940, *Allen 2267;* same locality, Sept. 1, 1941, *Allen 2701* (Herb. Ames, TYPE); mountains beyond La Pintada, alt. 400–600 m., Feb. 17, 1935, *Hunter & Allen 594.*

Pleurothallis antonensis has been referred to *P. phyllocardia* Reichb. f., a rather obscure and poorly described species. We have an analysis of *P. phyllocardia* which shows the lip to be about one-fourth the length of the lateral sepals, while in *P. antonensis* the lip is half as long as the sepals. The lateral sepals of *P. phyllocardia* are about as broad as the dorsal sepal and the petals are only slightly arcuate, while in *P. antonensis* the lateral sepals are broader than the dorsal sepal and the petals are strongly arcuate.

The specific name recalls El Valle de Antón which, apparently, has a very large number of endemic species of orchids.

PLEUROTHALLIS ARISTATA Hook. in Ann. & Mag. Nat. Hist. **2**: 229, *t. 15.* 1839. *(P. dichotoma* Ames, Sched. Orch. **6**: 58. 1923, non Schltr.; *P. divexa* Ames. Sched. Orch. **7**: 20, *t. 5.* 1924).

Costa Rica, Panama, the West Indies and British Guiana.

Pleurothallis Urbaniana Reichb. f. has been considered to be the same as the two synonyms cited (Schweinfurth in Bot. Mus. Leafl. Harv. Univ. **6**: 36. 1938) but no authentic material or record is available and the description shows some discrepancies. Known only from Chiriquí in Panama *(Davidson 187).*

PLEUROTHALLIS BRIGHAMII S. Wats. in Proc. Am. Acad. **23**: 285. 1888; Ames, Sched. Orch. **2**: 18. 1923; **7**: 19, *t. 7.* 1924. *(P. periodica* Ames, Sched. Orch. **7**: 21, *fig. 4.* 1924; *P. acrisepala* A. & S. Sched. Orch. **8**: 22. 1925; *P. barboselloides* Schltr. in Fedde Repert. Beih. **17**: 18. 1922; **59**: *t. 29, fig. 113.* 1931).

In attempting to separate and describe the various species cited above for the account of the Panamanian flora it was found that, as a whole, they formed a most complete series.

Pleurothallis pyrosodes Reichb. f. is of this alliance. It is known to me only by the description and a rather rough analysis of the type but it may prove to be the same and if so it will include all of the above names as synonyms. *Pleurothallis Brighamii,* as now constituted, is a species of low elevations, perhaps not exceeding 400 m., which extends from Guatemala to Panama.

PLEUROTHALLIS **cardiochila** L. O. Williams, sp. nov. (pl. 33, figs. 8–10). Herbae caespitosae, epiphyticae, usque ad ca. 21 cm. altae. Folia lanceolato-cordata, acuminata, coriacea. Inflorescentia fasciculata, uni(–pauci)-flora. Sepalum dorsale oblongo-ovale, obtusum, cucullatum. Sepala lateralia connata, ovata, acuta. Petala linearioblonga, acuta, basi subauriculata. Labellum unguiculatum; lamina suborbiculari-cordata, obtusa; unguis oblongus. Columna generis.

Small caespitose epiphytic herbs up to about 21 cm. tall. Secondary stems up to about 11 cm. long, slender, with 1–2 loose, chartaceous sheaths toward the base, naked above. Leaves 9–10 cm. long, 3.6–3.9 cm. broad, lanceolate-cordate, acuminate, coriaceous. Inflorescence a 1(–few ?)-flowered fascicle subtended by a chartaceous sheath about 1–1.5 cm. long, much shorter than the leaves. Flowers very large for the group, yellowish with the dorsal sepal tinged with dark red, lip deep orange. Dorsal sepal about 20 mm. long, 12.5 mm. broad, oblong-oval, obtuse, with 7–9 principal nerves, strongly cucullate. Lateral sepals connate to their apices, about 18 mm. long, 10 mm. broad, ovate, acute, with 7–9 principal nerves. Petals about 13 mm. long, 2.5 mm. broad, linear-oblong, acute, arcuate, subauriculate on the posterior margin at the base, entire, 3-nerved at the base, the posterior nerve short, anterior nerve branched near the base,—hence the apical part of the petal 3-nerved. Lip unguiculate; lamina about 6 mm. long, 5.5 mm. broad, suborbicular-cordate, obtuse, callus-thickened along the sinus and below at the subapiculate apex, 3-nerved; claw about 2 mm. long, oblong. Column about 3 mm. long; clinandrium lacerate-digitate.—CHIRIQUÍ: rain forest, Bajo Chorro, Boquete District, alt. ca. 1800 m., Jan. 13, 1938, *Davidson 119* (Herb. Ames, TYPE).

Pleurothallis cardiochila is most nearly allied to *P. palliolata* Ames, from which it is easily distinguished by the suborbicular-cordate lip and by the 3-nerved, entire petals.

PLEUROTHALLIS **ellipsophylla** L. O. Williams, sp. nov. (pl. 33, figs. 1–7). Herbae parvae, repentes vel caespitosae, usque ad 2 dm. altae. Folia late elliptica vel elliptico-oblonga, acuta vel obtusa. Inflorescentia uni- vel pluriracemosa, racemis quam folia brevioribus. Sepalum dorsale anguste lanceolatum vel elliptico-oblanceolatum, acutum vel acuminatum. Sepala lateralia in laminam connata; lamina lanceolata, acuta vel subaristata. Petala elliptica vel elliptico-lanceolata, acuta vel acuminata, prope medium denticulata vel denticulato-lacerata. Labellum lanceolatum, acutum vel subaristatum, basi biauriculatum; unguis perbrevis; lamina prope basem callo V-formi ornata.

Small repent or caespitose epiphytic herbs up to about 2 dm. tall. Secondary stems up to 9.5 cm. long, prominently angled when dry, with one or more loose sheaths covering the lower part. Leaves 4–9.5 cm. long, 0.7–2.7 cm. broad, elliptic to elliptic-oblong, acute or obtuse, epetiolate, coriaceous. Inflorescence 1 or several short, few-flowered racemes from the axil of the leaf, approximately half as long as the leaf. Dorsal sepal 9–14 mm. long, 1.5–2.5 mm. broad, narrowly lanceolate to elliptic-oblanceolate, acute or acuminate, cucullate, 3-nerved, puberulent dorsally. Lateral sepals 10–13 mm. long and together 3–4 mm. broad, connate except at the tip, the lamina lanceolate, acute or subaristate, puberulent dorsally, gibbous and with a mentum at the base, 6-nerved. Petals 5.5–6.5 mm. long, 1.4–2 mm. broad, elliptic or elliptic-lanceolate, acute or acuminate, arcuate, denticulate or denticulate-lacerate toward the middle but the base and apex usually entire, 1-nerved. Lip 4–5 mm. long and 1–1.3 mm. broad, lanceolate, acute or subaristate, somewhat fleshy, prominently biauriculate at the base, claw very short, lamina with an inconspicuous V-shaped callus on the basal third. Column about 3 mm. long, with a narrow wing and two erect teeth at the apex; column-foot very short.—BOCAS DEL TORO: epiphyte, southwest of Bocas at Maccaw Hill, Isla Colón, alt. 0–125 m., (flowers greenish-brown), Aug. 25, 1940, *H. von Wedel 560* (Herb. Ames, TYPE); Río Cricamola, between St. Louis and Konkintöe, alt. ca. 10–15 m., (''labellum and hood greenish-yellow, striped with brown''), Aug. 12–16, 1938, *Woodson, Allen & Seibert 1884*.

Pleurothallis ellipsophylla is allied to *P. vittata* Lindl. and to *P. geminicaulina* Ames. From the former it is distinguished by larger flowers with comparatively narrow lip which lack lateral auricles or lobes; from *P. geminicaulina* it is distinguished by the compara-

tively longer and narrower lip with more prominent basal auricles, but lacks the parallel carinae of the lamina.

PLEUROTHALLIS OCTOMERIAE Schltr. in Fedde Repert. Beih. **17**: 21. 1922. *(P. cerea* Ames, Sched. Orch. **4**: 19. 1923; **7**: 26, *fig. 4* and *t. 8* in part. 1924).—COCLÉ: epiphytic, hills north of El Valle de Antón, trail to Las Minas, alt. ca. 1000 m., (sepals and petals pure white with narrow bright red margin, anther-cap red), Sept. 1, 1941, *Allen 2719.*

Pleurothallis octomeriae and *P. cerea* have flowers that are identical but the leaves on the types of the two species differ markedly in size, those of *P. octomeriae* varying from 4 to 14 cm. long and from 1 to 2.5 cm. broad while the single imperfect leaf known for *P. cerea* is "17 cm. or more long, 6.3 cm. wide." In both the shape of the leaf is essentially elliptic. In the collection cited above *(Allen 2719),* of which there are four excellent specimens, the extremes of leaf sizes are 8 and 17 cm. long and 1.7 and 6 cm. broad. This indicates that the leaf size in the two proposed species is not specific and that they should be treated as one.

EPIDENDRUM PHYSODES Reichb. f.—BOCAS DEL TORO: terrestrial, vicinity of Chiriquí, Oct. 9, 1940, *H. von Wedel 1126.* New to Panama, previously known from Mexico, Guatemala and Costa Rica.

CATTLEYA SKINNERI Batem. var. **autumnalis** P. H. Allen, var. nov. Herbae epiphyticae vel saxicolae. Labellum concolor vel subconcolor. E specie planta robustior et floribus in autumno differt.

Differs from the species in that it is a somewhat more robust plant which flowers in the autumn. The lip usually lacks the white spot.—PANAMÁ: vicinity of Bejuca, alt. ca. 30 m., Aug. 15, 1941, *Allen 2668* (Herb. Ames, TYPE); east of [Panama] City, fall 1915, *Powell 16;* CANAL ZONE: along Caño Quebrada, Oct. 30, 1914, *Pittier 6828.*

Endemic to Panama where the species, a plant of higher elevations, does not occur (unless possibly in the mountains of Chiriquí).

Platyglottis L. Wms. gen. nov.

Platyglottis L. O. Williams gen. nov. (Orchidaceae-Monandrae-Acrotonae-Kerosphaereae-Acranthae-Ponereae). Herbae epiphyticae, caespitosae, e rhizomate perbrevi. Caules graciles, non pseudobulbosi, indurati, simplices. Folia disticha, coriacea. Inflorescentia terminalis (vel subterminalis ?), racemosa. Sepala petalis

subaequalia vel petala latiora. Labellum apice columnae pedi articulatum; lamina late ligulata, integra. Columna brevis, clavellata, exalata, basi in pedem brevem producta; anthera terminalis, operculata, incumbens, sex-loculata; pollinia 6($^{00}_{0000}$), aequalia cerea.

Epiphytic caespitose herbs from a very short rhizome. Stems slender, non-pseudobulbous, indurated, simple. Leaves alternate, distichous, coriaceous, plane, deciduous, leaf-sheaths tightly enfolding the stem. Inflorescence terminal (or subterminal?), racemose. Sepals subequal; dorsal sepal free; lateral sepals adnate to the short column-foot at their bases and with it forming an inconspicuous mentum. Petals similar to the sepals or broader. Lip articulated to the apex of the column-foot; lamina broadly ligulate, entire. Column short, clavellate, wingless, produced into a short foot at the base; anther terminal, operculate, incumbent, 6-loculate; pollinia 6, equal,—four basal in one laterally compressed series,—two terminal in a second laterally compressed series, ceraceous.

A single species known only from the vicinity of El Valle de Antón, Coclé Province, Panama.

The Ponereae is a small tribe of orchids the genera of which are limited to the American tropics or subtropics. The twelve genera of the tribe which seem to be recognizable are, with one exception, small with about six or fewer species each. Vegetatively these genera are divisible into two approximately equal series: (1) those with elongated stems and distichous leaves scattered along the stem; and (2) those with swollen or pseudobulbous stems upon which the leaves are terminal. These two groups may be further divided by various means.

The Brazilian genus *Orleanesia* Rodr., which I know only from a plate and descriptions, seems to approach *Platyglottis* in vegetative characters more than do the other genera of the tribe. Thus *Orleanesia,* which has two small and two large pollinia and apparently other technical characters, is easily separated from *Platyglottis.*

The other genera which approach *Platyglottis* in vegetative characters, *Jacquiniella* Schltr., *Ponera* Lindl., *Neourbania* Fawc. & Rendle, *Isochilus* R. Br. and *Octadesmia* Benth., may be quickly distinguished by the technical characters of the pollinia,—all having four pollinia except *Octadesmia* which has eight. *Platyglottis* is the only genus of this alliance which has six pollinia. However, six pollinia are not uncommon in the genus *Scaphyglottis* Poepp. &

Endl. *(sens. lat.)* which belongs in the series of the tribe having thickened stems or pseudobulbs.

PLATYGLOTTIS **coriacea** L. O. Williams, sp. nov. (pl. 34). Herbae epiphyticae, caespitosae, usque ad ca. 4.5 dm. altae. Folia anguste ligulata, obtusa, coriacea. Inflorescentia racema brevis, pauciflora. Sepalum dorsale lanceolatum, acutum vel acuminatum. Sepala lateralia lanceolata, acuta vel acuminata, leviter obliqua. Petala elliptico-oblanceolata, leviter obliqua. Labellum late ligulatum, subpanduratum, integrum, apice rotundatum. Columna generis.

Epiphytic caespitose herbs up to about 4.5 dm. tall. Stems 5–8 mm. in diameter, slender, leafy, becoming naked with age. Leaves 2.5–6 cm. long, 1–1.5 cm. broad, narrowly ligulate, obtuse, obscurely and unequally bilobed at the apex, coriaceous, distichous, deciduous. Inflorescence a short, few-flowered raceme, terminal (or subterminal?); bracts 7–20 mm. long, elliptic-lanceolate, acute, cucullate. Flowers large for the Ponereae, sepals and petals lavender, the lip lavender with greenish margins. Dorsal sepal about 10 mm. long, 3.5 mm. broad, lanceolate, acute or acuminate, 5(–7)-nerved. Lateral sepals about 10 mm. long, 3 mm. broad, lanceolate, acute or acuminate, slightly oblique, 5-nerved. Petals about 10 mm. long, 3.5 mm. broad, elliptic or elliptic-oblanceolate, somewhat oblique, obscurely constricted near the apex, 5(– 7)-nerved. Lip about 10 mm. long and 5 mm. broad near the apex, broadly ligulate, subpandurate, entire, apex rounded, margins thin and plicate laterally; disc fleshy, with a pair of inconspicuous, subumbonate calluses at the base. Column of the genus, about 4 mm. long.—COCLÉ: region north of El Valle de Antón, alt. ca. 1000 m., Feb. 20, 1942, *Allen 2936* (Herb. Ames, TYPE).

Described and illustrated from a herbarium specimen and flowers preserved in alcohol.

COELIOPSIS HYACINTHOSMA Reichb. f.—COCLÉ: epiphytic, hills north of El Valle de Antón, alt. ca. 1000 m., (inflorescence pendant, sepals and petals creamy white, labellum creamy white with yellow blotch near base of column), April 12, 1941, *Allen 2402.*

The original specimens were grown in England from material presumed to have been collected in Panama. Three collections, at least, have been made subsequently in Costa Rica but this is the first specimen known from a definite locality in Panama.

KEGELIELLA **Houtteana** (Reichb. f.) L. O. Williams, comb. nov. *(Kegelia Houtteana* Reichb. f. in Bot. Zeit. **10**: 670. 1852; Xenia

Orch. **1**: 45, *t. 20, I, 1–7.* 1854).—COCLÉ: vicinity of La Mesa, region north of El Valle de Antón, alt. 1000 m., Oct. 10, 1941, *Allen 2759.*

Kegeliella is a genus so extremely rare that but a single specimen previously had ever been received at the Ames Herbarium, and that from Jamaica. Mansfeld (Fedde Repert. **36**: 60. 1934) described an additional species of the genus from Costa Rica and called attention to the fact that *Kegelia* Reichb. f. was a homonym. It is apparent from Mansfeld's discussion that the genus was unrepresented in the Berlin herbarium until he received that specimen.

Kegeliella Houtteana was originally described from garden material that was said to have been discovered in Surinam. In repeating his description two years later in 'Xenia Orchidacea' Reichenbach wrote "Es ist sehr wahrscheinlich, dass die Mutterpflanze—von der Tracht einer Cirrhaea—aus Surinam stammt und von Herrn Kegel entdeckt wurde," which may indicate that he has some reason to doubt his previous statement of locality.

Reichenbach's drawing of his *Kegelia Houtteana,* like so many of his drawings, shows enough to recognize the genus but is not definite enough for one to be able to state that a specimen in hand is, without doubt, conspecific. There are some differences in the flowers of the Allen specimens and the only other specimen available (Jamaica, *Skinner & Robinson 7432)* but until more material is available and Reichenbach's type is better understood it is perhaps better not to try to separate the two.

The genus is new to Panama.

MAXILLARIA ARACHNITIFLORA A. & S.—COCLÉ: epiphytic; trail to Las Minas, hills north of El Valle de Antón, alt. 1000 m., Dec. 2, 1941, *Allen 2875.* Previously known from Costa Rica where it is rare. The present specimen is smaller than the type specimen.

MAXILLARIA **conduplicata** (A. & S.) L. O. Williams, comb. nov. *Ornithidium conduplicatum* A. & S., Sched. Orch. **8**: 66, *fig.* 1925).—CHIRIQUÍ: Palo Alto Hill, alt. 1300–1600 m., Sept.-Oct. 1923, *Powell 341.* Known only from Panama.

MAXILLARIA ENDRESII var. ANGUSTISEGMENTA (A. & S.) C. Schweinf. —COCLÉ: hills north of El Valle de Antón, alt. 1000 m., Dec. 2, 1941, *Allen 2870.*—Previously known from Costa Rica. The present specimen has blunter sepals and petals than usual and the peduncles are shorter.

MAXILLARIA **neglecta** (Schltr.) L. O. Williams, comb nov. *(Ornithidium anceps* Reichb. f., Beitr. Orch. Centr.-Am. 75. 1866, non *Maxillaria anceps* A. & S.; *O. neglectum* Schltr. in Fedde Repert. **19**:

242. 1923).—CANAL ZONE: on trees, hills north of Frijoles, Dec. 19, 1923, *Standley 27669;* CHIRIQUÍ: epiphyte in shade; valley of Upper Río Chiriquí Viejo, alt. 1300–1900 m., July-Aug. 1937, *White & White 37.* The species is quite a common one and extends from Honduras to Panama.

MAXILLARIA **Pittieri** (Ames) L. O. Williams, comb. nov. *(Ornithidium Pittieri* Ames, Sched. Orch. **2**: 35. 1923).—CHIRIQUÍ: rain forest, Bajo Chorro, Boquete District, alt. ca. 2000 m., *Davidson 117.* Costa Rica and Panama.

CRYPTOCENTRUM CALCARATUM Schltr. in Fedde Repert. **12**: 214. 1913. *(Pittierella calcarata* Schltr. l.c. **3**: 81. 1906).—COCLÉ: region north of El Valle de Antón, alt. ca. 1000 m., (flowered at Ancon, C. Z.), Nov. 5, 1941, *Dunn 2762.* This is the third species of *Cryptocentrum* to be found in Panama recently. Previously known from Costa Rica where it is not uncommon.

TRICHOPILIA TURIALBAE Reichb. f.—VERAGUAS: epiphytic; mountains west of Azuero, alt. 600 m., (flowered in collection of Mr. A. G. B. Fairchild), Sept. 10, 1941, *Dunn s.n.*—Previously known from Costa Rica. *Trichopilia turialbae* is allied to *T. tortilis* Lindl. and seems to be distinguished by its smaller, differently colored flowers with lateral sepals connate to about the middle. The sepals and petals are 3 cm. long in our specimen, while the lip is 4 cm. long. The sepals and petals of the type of *T. turialbae,* of which we have a photograph, are nearly as long as the lip.

MESOSPINIDIUM WARSCEWICZII Reichb. f. in Bot. Zeit. **10**: 929. 1852; Xenia Orch. **1**: 36, *t. 16, figs. I, 1–11.* 1854.—COCLÉ: epiphyte; El Valle de Antón, alt. 650 m., (sepals and petals greenish yellow spotted maroon, lip pale yellow with minute red spots; flowered at San Francisco de la Calita), Aug. 30, 1941, *A. G. B. Fairchild (Allen 2685).* Apparently the first collection of this species since the original was made some ninety years ago.

The determination has been made on the basis of the original description and figures I and 1 cited above. Figure 1 is exactly like the plant in hand, and figure I is fairly good; figures 4 and 5 are erroneous and misleading; the remainder of the figures are fairly good.

The generic status of the plant is open to some question. It is very close to *Odontoglossum* and especially to Lindley's group *"Myanthium,"* an aggregation of small-flowered species not unlike *Mesospinidium* in habit and flower structure. However, in *Mesospinidium Warscewiczii* there seems to be a short but distinct col-

umn foot and, consequently, a mentum. These conditions are not known to me to occur in *Odontoglossum*.

LOCKHARTIA MICRANTHA Lindl.—COCLÉ: region north of El Valle de Antón, alt. ca. 1000 m., Jan. 13, 1942, *Allen 1942*. This collection is peculiar because of the very short lateral lobes of the lip, in this case almost lacking. *Lockhartia integra* A. & S. is probably a synonym.

DICHAEA MORRISII Fawc. & Rendle.—COCLÉ: epiphytic; trail to Las Minas, hills north of El Valle de Antón, alt. ca. 1000 m., (sepals and petals striped with deep lavendar, lip deep lavendar), Dec. 2, 1941, *Allen 2874*. Previously known from the Costa Rica and the West Indies.

CHLORANTHACEAE

HEDYOSMUM NUTANS Sw.—BOCAS DEL TORO: Fish Creek Mts., Apr. 29, 1941, *H. von Wedel 2362*.—Known from the West Indies. Judging from the original description of *H. Brenesii* Standl. (Fl. Costa Rica, p. 371), that species may be synonymous with *H. nutans*. There seems to be no valid distinction between the von Wedel specimen and West Indian plants determined as *H. nutans*, and no justification in assuming a plant to be different from West Indian species merely because it is found on the Central American mainland.

LACISTEMACEAE

LOZANIA KLUGII Mansf.—BOCAS DEL TORO: Old Bank Island, Feb. 18, 1941, *H. von Wedel 2121*.—Previously known from Colombia and Peru. No specimens of *L. pedicellata* (Standl.) L. B. Smith were available for comparison, but in the von Wedel specimen the racemes are not always solitary in the leaf axils, the character separating *L. pedicellata* in Smith's key (Phytologia **1**: 138. 1935) from the *L. Klugii* group. The specimen agrees well with South American specimens of *L. Klugii*. This genus has also been included in the Flacourtiaceae by many systematists.

MORACEAE

(P. C. Standley)

PEREBEA **hispidula** Standl., sp. nov.—Ramuli gracillimi brunnescentes vel ochracei dense hispiduli vel fere hirsuti, internodiis elongatis; stipulae caducae lineares ca. 1.5 cm. longae extus hirsutae; folia majuscula brevissime petiolata membranacea, petiolo crasso hirsuto vix ultra 4 mm. longo; lamina oblonga vel elliptico-oblonga

14–23 cm. longa 4.5–8 cm. lata caudato-acuminata, acumine angusto interdum fere lineari usque 2 cm. longo, basi paullo inaequali anguste rotundata vel obtusissima, remote saltem supra medium serrato-denticulata, supra sublucida ad costam sparse hirsuta aliter glabra, subtus paullo pallidior ad costam nervosque hispidula vel hirsuta ad venas puberula et in areolis minute scaberulo-asperata, costa tenui prominente, nervis lateralibus utroque latere ca. 16 angulo lato divergentibus leviter arcuatis prope marginem arcuato-conjunctis, venis prominulis laxe reticulatis; receptaculum femineum axillare fere sessile in statu fructifero 2 cm. latum, bracteis paucis imbricatis inaequalibus latis obtusis vel apiculatis, interioribus vix ultra 4 mm. longis, omnibus extus dense albido-strigosis; drupae ca. 8 sessiles ovali-globosae ca. 7 mm. longae et 5–6 mm. latae apice basique rotundatae, ubique dense hispidulae; stylus crassus cum ramis vix 1 mm. longus, ramis stylo brevioribus crassis acutis.—BOCAS DEL TORO: vicinity of Chiriquí Lagoon, *H. von Wedel 1935* (Herb. Missouri Bot. Gard. TYPE).

In leaves and inflorescence this tree, of somewhat doubtful generic position, is quite unlike any species of *Perebea* that has been recorded from Central America, and it is not very closely related to any of the South American ones of which material is available. Probably it is referred correctly to *Perebea,* but further material will be necessary to decide this point, the available specimens being unfortunately rather inadequate and incomplete.

CAPPARIDACEAE

CAPPARIS **clara** Schery, sp. nov. Arbuscula 5 m.; ramulis novellis aureobrunneis cum squamis minutis peltatis stellatis, internodiis ca. 2 cm. longis; foliis alternatis ellipticis basi acutis apice attenuatissime mucronatis, petiolis brevibus ca. 5 mm. longis angulatis supra anguste canaliculatis, laminis 15–20 cm. longis 4.3–6.3 cm. latis subtus argenteo-lucidis medio nervio prominente nervis lateralibus secondariis subprominentibus 7–12 paribus supra planis lepidotis glabris glaucescentibus; pedunculis ca. 10 cm. longis terminalibus vel subterminalibus in axilles foliorum aureo-brunneis squamis pilisque minutis stellatis, pedicellis ca. 6, ca. 2 cm. longis umbellatis; floribus albis gracilibus, calycibus patelliformibus extus argenteo-stellato-pubescentibus 4-lobatis lobis triangularibus 1 mm. longis, tubo 1 mm. alto; petalis oblongis ca. 8 mm. longis 3.5 mm. latis extus minutissime stellato-pubescentibus intus subglabris; staminibus ca. 20, filamentis glabris ca. 2 cm. longis, antheris

oblongis ca. 2 mm. longis, gynophorio glabro ca. 2.5 cm. longo; ovario pluriovulato oblongo 3 mm. longo stellato-pubescenti, stigmate sessili obtuso placentis 3 quisque cum 2 ordinibus ovularum; fructu ignoto.—BOCAS DEL TORO: Fish Creek Mts., Apr. 16, 1941, *H. von Wedel 2235* (Herb. Missouri Bot. Gard., TYPE).

Apparently this species is distinct from any published species known from Panama, Costa Rica, or Colombia. Its affinities are probably with *C. detonsa* Tr. & Pl., judging from the description of that species. In Dugand's clarifying synopsis of *Capparis* in Colombia (Caldasia **2**: 37. 1941), the von Wedel plant keys out to *C. detonsa*, but differs from it especially in having smaller flowers and a less pronounced pubescence. *C. clara* can be distinguished from most or all other species by the very long apical attenuation of the leaf. Characters also distinctive are the silvery sheen of the lower leaf surface, the slender, graceful inflorescence, and the minute golden-brown peltate scales of the very young branches. The leaves are perfectly elliptic, acute at the base, short-petiolate. The flowers are of medium size, 4-parted, umbelliform from an elongate peduncle. The elongate gynophore bears terminally an ovary with 3 placentae, each placenta with 2 rows of ovules. About 20 stamens surround the gynophore.

LEGUMINOSAE

COJOBA CATENATA (D. Sm.) Britton & Rose.—BOCAS DEL TORO: Isla Colón, July 29, 1940, *H. von Wedel 199*. Previously known from Costa Rica.

DITREMEXA LIGUSTRINA (L.) B. & R.—BOCAS DEL TORO: Isla Colón, Aug. 23, 1940, *H. von Wedel 517*. Apparently new to the continent; previously known from the West Indies.

INGA PREUSII Harms—BOCAS DEL TORO: Water Valley, Sept. 9, 1940, *H. von Wedel 672*. Previously known from northern Central America.

MELIACEAE

GUAREA CHICHON C. DC.—BOCAS DEL TORO: Cocoa Cay, vicinity of Chiriquí Lagoon, Oct. 26, 1941, *H. von Wedel 2874*. Previously known from Mexico and British Honduras.

MALPIGHIACEAE

HETEROPTERIS PLATYPTERA DC.—BOCAS DEL TORO: Old Bank Island, Feb. 8, 1941, *H. von Wedel 2027*. Previously known from South America.

DICHAPETALACEAE

DICHAPETALUM **axillare** Woodson, sp. nov. Arbuscula ca. 5 m. alta; ramulis novellis dense cinereo-tomentellis tandem glabratis. Folia brevissime petiolata oblongo-oblanceolata apice obtuse acuminata basim versus acute attenuata cum petiolo ca. 0.3 cm. longo 9–15 cm. longa 2.5–5.0 cm. lata firmiter membranacea venis venulisque utrinque cinereo-pilosulis petiolo simile. Inflorescentia aut terminalis aut axillaris numquam petiolo adnata subcapituliformis pauciflora ca. 1–2 cm. longa et lata dense cinereo-tomentella. Flores ca. 0.1 cm. longi pedicellati albi; sepalis ovatis ca. 0.2 cm. longis extus dense cinereo-pilosulis intus glabris; petalis aequilongis anguste ovatis medio bifidis; ovario ovoideo ca. 0.1 cm. longo dense pilosulo.—COCLÉ: hills north of El Valle de Antón, alt. about 1000 m., July 14, 1940, *P. H. Allen 2202* (Herb. Missouri Bot. Gard., TYPE).

Undoubtedly a close relative of *D. Donnell-Smithii* Engl., which has been reported as ranging from western Panama (probably Chiriquí) to British Honduras. This latter species, however, apparently always has more diffuse inflorescences with peduncles strongly adnate to the petiole of a subtending leaf, the leaves broader and less attenuate toward the base, and the indument less shaggy and conspicuously ferruginous.

DICHAPETALUM NEVERMANNIANUM Standl.—BOCAS DEL TORO: Water Valley, Oct. 30, 1940, *H. von Wedel 1424*. Previously known only from the type collection from Costa Rica.

EUPHORBIACEAE

(L. Croizat)

PERA **aperta** Croizat, sp. nov. Arbor 6-metralis; innovationibus plus minusve conferte crustaceo-lepidotis, indumento haud laeto; foliis more generis in sicco atro-discoloribus, supra costa excepta glabris, subtus lepidibus argillaceis dissitis adspersis, oblongis, apice breviter acuminatis, basi rotundato-cuneatis, 1.0–5 cm. longis, 2–4 cm. latis, margine revoluto subintegro, venis primariis plus minusve patentibus ca. 7-jugis, sat obscuris; petiolo eglanduloso, 1.5–2 cm. longo; inflorescentiis axillaribus, ♀ tantum visis; pedunculo communi gracili, lepidoto, ad 1 cm. longo, apice bracteolis binis ca. 2 mm. longis terminato, floribus ♀ pernudis, scilicet in sacco e bracteolis more generis efformato haud inclusis, glomerulatim 2–5, ecalyculatis vel subecalyculatis, ovario lageniformi, ca. 2.5 mm. longo, stylo in stigmatibus 3 latis, papillosis, obtriangularibus evadente;

loculis in ovario (videtur) 4, semine valde immaturo carunculato.—COCLÉ: hills south of El Valle de Antón, May, 1941, *P. H. Allen 2506*, (U. S. National Herb. TYPE).

The peculiar characters of the new species here described under Mutis's genus *Pera* suggest brief considerations of a preliminary nature on the limits of the genus.

The region in which the type material was collected is aptly characterized in a letter of P. H. Allen to C. V. Morton, quoted in the latter's work on the Gesneriaceae from Panama, and this writer readily agrees with Allen's comment: "I think I can guarantee that you will get some interesting plants" (Ann. Mo. Bot. Gard. **29**: 35. 1942). *Pera aperta,* indeed, is an extremely interesting plant, the first of its kind ever seen by this writer.

Aside from the technicalities of its flowers, *Pera* is supposed to be characterized by a peculiar involucre which surrounds the inflorescence. This involucre (see Pax & Hoffmann in Engler & Prantl's Nat. Pflanzenfam. **19c**: 154, *fig. 78 b,c,d,e.* 1931) is a bracteolate, baglike structure which, towards anthesis, breaks open to expose the ♂ and ♀ flowers. The perianths proper are much reduced, and the entire arrangement may be defined as a coarctate lateral spicate or subglomerulate inflorescence, uni- or bisexual, surrounded by a bract or fused bracts which become open at the time of flowering. On account of the bracteate inflorescence, *Pera* has been maintained by Pax & Hoffmann as the type of the tribe Pereae, placed next to the Dalechampieae in the classification of Engler & Prantl, a disposition which is probably more artificial than natural but is not to be challenged here.

Pera is the subject of an unusually large literature which deals with its sectional or presumedly sectional units. In one of the early studies of this group, Klotzsch (in Wiegm. Arch. **7**: 176. 1841) published the tribe Prosopidoclineae, typified by *Pera* and characterized by: "Ovarii loculi uniovulati. Semina arillata, exalbuminosa. Involucra subgloboso-vesicaeformia, hinc hiantia, deinde plus minusve explanata, demum decidua, 3,4–6 flora, bracteis suffulta. Flores dioeci, apetali." Regarding Klotzsch's later publication of the Peraceae as a family, this writer may remark that Prosopidoclineae is an illegitimate tribal name, because it is not derived from the name of a genus under the group (Art. 24, Internat. Rules Bot. Nomencl., 1935). Non-existent as a taxonomic name under the Rules (Art. 7) are Baillon's "Péridées" (Étude Gén. Euphorb., 433. 1858), improperly cited by Pax & Hoffmann (in op. cit., 153) as

Perideae. The legitimate tribal[1] name for the *Pera* plexus, consequently, remains Mueller's Pereae (Linnaea **34**: 144. 1865).

Klotzsch recognized under the Prosopidoclineae: *Schismatopera* Kl., *Spixia* Leandro do Sacr., *Pera* Mutis, and *Peridium* Schott. This arrangement was criticized by Baillon (op. cit., 268-272), who maintained as a genus only *Pera* with two sections (op. cit., 433-434), Eupera and Schismatopera, characterized, respectively, by "Étamines au nombre de 2–6 (ou plus), unies inférieurement dans une étendue peu considérable," and "Étamines 4–8 monadelphes; filets soudés en une colonne cylindrique plus longue." This separation rests upon an essential difference apparent in many euphorbiaceous flowers, some of which have the androecium connate to form a staminal column *(Jatropha,* for instance); others, on the contrary, have solute stamens *(Manihot* being an example). Whether this difference holds good in *Pera,* as claimed by Baillon, this writer does not know; its basis is sound in theory, but it may be found in practice that the much reduced perianths of *Pera* bear both androecia set up into columns or more or less solute, within the same natural affinity.

In his elaboration of the Euphorbiaceae (in DC. Prodr. **15**[2]: 1025-1031. 1866), Mueller maintains five sections, Schismatopera (Kl.) Baill., Eupera Baill., Spixia (Leandro do Sacr.) Baill., Neopera Griseb., Peridium (Schott) Muell.-Arg. Another section, Diplopera, is added by Mueller in Martius, 'Flora Brasiliensis' (**11**[2]: 423. 1874), which Mueller describes as follows: "Involucra basi unibracteolata, bisexualia, simul flores masculos 3–4 centrales et femineos periphericos gerentia. Calyx masc. evolutus . . . Sectio insigniter peculiaris. . . ." Six sections, too, are maintained in the most recent classification of Pax & Hoffmann (op. cit., 154), as follows: Diplopera Muell.-Arg., Perula (Schreb.) Pax & Hoffmann, Spixia (Lean-

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[1] The proper definition and correct consequent use in modern taxonomy of the units between the genus and the family, and the genus and the species, published by early or comparatively early authors, is beset with difficulties on account of the loose and conflicting manner in which these authors were wont to interpret or define these units. For instance: Mueller published the Pereae, but designated and consequently used them as a subtribe, not as a tribe. Since Art. 24 of the current Rules declares that the name of a tribe ends in -eae and that of a subtribe in -inae, there is conflict between Mueller's name and his own designation of it. This writer believes that, *in principle,* such conflicts are to be defined in the sense that the designation of the rank by the author of the name is irrelevant, under Art. 24, so long as it is contradicted by the name's ending. Thus, the Pereae of Mueller, having the legitimate ending of a tribal name, are to be accepted in modern taxonomy *as a tribe,* despite Mueller's insistence that *they are a subtribe.* This principle is general and important enough to deserve special mention here.

dro do Sacr.) Muell.-Arg., Schismatopera (Kl.) Baill., Neopera Griseb., Peridium (Schott) Muell.-Arg. This classification, which does not differ from that of Mueller in essential characters, is erroneous in two respects: (1) It substitutes Perula Pax & Hoffm. for Eupera Baill., under the evidently mistaken assumption that Schreber's Perula, being earlier than Eupera Baill., must be used as the basis for a new combination. Pax & Hoffmann probably are not aware of the fact that new combinations are required (Art. 53) only when names are transferred *without a change of rank*, it being illegitimate to effect a transfer, *when the rank is changed* and the position is preoccupied (Art. 16, Art. 61 [1]).[1] (2) It mistakenly credits the combination of Spixia to Mueller, while this combination was effected by Baillon (in Adansonia **5**: 222. 1864-1865).

Under the systematic viewpoint, none of the current subgeneric units of *Pera* even approach the characters of *P. aperta*, for in this peculiar plant the involucre is absent, or at least reduced to minute bracteoles at the base of the gynoecium. In view of the emphasis placed throughout classification upon the involucre as a generic character it should be possible to elect *P. aperta* as the type of a new genus. This writer does not believe that the erection of a new genus is advisable, at least until much better material is available, because: (1) The Euphorbiaceae are identified by a tendency towards reduction and recombination of the floral organs rather than by set morphological characters. Accordingly, tendencies count in their classification far more than do characters; (2) The wood characters of *P. aperta* are those of Mutis's genus, as this writer has kindly been informed by Prof. I. W. Bailey of the Biological Laboratories of Harvard University, and so its gross morphology is that of *Pera*. (3) It is not to be overlooked that certain species in the vicinity of *P. aperta* may have partially developed involucres, intermediate between those of this species and the ones of *P. arborea* and its immediate allies. In conclusion, the emphasis placed upon the involucre as a generic character of *Pera* is not completely justified, and rather than a new genus, an emended description of *Pera*, the Pereae, and two new subgenera are required, as follows:

PERA Mutis in Svensk. Vetensk. Akad. Handl. Stockholm **5**: 299. 1784; Muell.-Arg. in DC. Prodr. **15**^{2}: 1025. 1866, et in Mart. Fl. Bras.

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[1] On account of a faulty interpretation of Art. 58, some botanists believe that older names must be maintained even when the rank is changed. This fallacy is refuted in a paper on the trinomial *typicus*, by this writer, now in course of publication.

11[2]: 421. 1874; Pax & Hoffmann in Engler & Prantl's Nat. Pflanzenfam. **19c**: 153. 1931; *Croiz. descr. emend.*

Flores utriusque sexus in involucro alabastriformi inclusi (subg. Eupera), involucro saltem ♀ interdum (subg. Gymnopera) nullo vel subnullo.

This emendation modifies also the characters of the Tribe Pereae, which is essentially based upon *Pera,* as follows:

Pereae Muell.-Arg. in Linnaea **34**: 144. 1865, et in DC. Prodr. **15**[2]: 1025. 1866; Pax & Hoffmann in Engler & Prantl's Nat. Pflanzenfam. **19c**: 153. 1931; *Croiz. descr. emend.*

Flores utriusque sexus saepissime in involucro alabastriformi inclusi.

Pera subg. **Eupera** (Baill.) Croiz., st. nov. *(Pera* Sect. *Eupera* Baill. in Étude Gén. Euphorb., 434. 1858, p.p.typ.; *Pera* Sect. *Perula* [*nomen serius illegitimum*] Pax & Hoffm. in Engler & Prantl's Nat. Pflanzenfam. **19c**: 154. 1931).

Floribus utriusque sexus in involucris alabastriformibus inclusis.

Typus nomenclaturalis: *Pera arborea* Mutis.

This writer does not know whether all the sections of Mueller and Pax & Hoffmann properly belong to a single subgenus, although he accepts as most probable at this writing that a separation can be established between *Pera* ssp. in general and *P. aperta* on the strength of the involucre character. In Martius', 'Flora Brasiliensis' (op. cit., **11**[2]: 421. 1874) Mueller accepts *Pera* "sensu Baill.," a disposition which this writer is neither prepared to challenge nor to endorse without qualification at this time.

Pera subg. **Gymnopera** Croizat.

Floribus saltem ♀ involucro alabastriformi carentibus, ad bracteolas minimas reducto.

Typus nomenclaturalis: *Pera aperta* Croizat.

HIPPOCRATEACEAE

Hippocratea celastroides HBK.—bocas del toro: Old Bank Island, Feb. 8, 1941, *H. von Wedel 2038.* Known from northern Central America and recorded from Colombia. Specific delimitation in this genus is at present so uncertain that it cannot be stated with surety that the von Wedel specimen is correctly determined. However, it matches other specimens so labeled in the herbarium, and seems distinct from *H. volubilis* L. growing in the same locality.

Hippocratea ovata Lam.—bocas del toro: vicinity of Chiriquí Lagoon, Oct. 7, 1940, *H. von Wedel 1059.* Known from South

America. This Wedel specimen in fruit may prove to be the same as *H. volubilis* or *H. celastroides,* but best matches specimens in the Missouri Botanical Garden herbarium labeled *H. ovata.*

ICACINACEAE

(R. A. Howard)

DISCOPHORA MONTANA Howard—BOCAS DEL TORO: Fish Creek Mts., Apr. 14, 1941, *H. von Wedel 2225.* Previously known only from Colombia.

SAPINDACEAE

CUPANIA HIRSUTA Radlk.—PANAMÁ: Vicinity of Capira, Feb. 12, 1939, *P. H. Allen 1687.* Previously known from South America. No satisfactory separation seems possible between this species and specimens in the herbarium labeled *C. fulvida.* The Allen specimen is intermediate between South American forms represented in the herbarium as *C. hirsuta,* and Costa Rican forms represented by specimens determined as *C. fulvida* Tr. & Pl.

PAULLINIA CALOPTERA Radlk.—BOCAS DEL TORO: Water Valley, Sept. 23, 1940, *H. von Wedel 904.* Previously known from South America.

QUIINACEAE

(P. C. Standley)

LACUNARIA **panamensis** (Standl.) Standl., comb nov. (*Quiina panamensis* Standl. Field Mus. Publ. Bot. **4**: 236. 1929).—COCLÉ: hills north of El Valle de Antón, trail to La Mesa, alt. about 1000 m., Aug. 31, 1941, *P. H. Allen 2689.* A tree 15 m. tall; fruits woody, brown. *Quiina panamensis* was based upon *G. Proctor Cooper 609,* from Buena Vista Camp on Chiriquí trail, Prov. Bocas del Toro, and consisted of specimens in bud. Study of the type and of the recent collection obtained by Mr. Allen shows that the tree belongs to the genus *Lacunaria,* segregated in 1925 from *Quiina* by Dr. Ducke. Rather numerous *Quiina* species of South America have been transferred to *Lacunaria* in recent years, and it is not surprising to find a member of the genus in Panama. The only other member of the family known from North America, *Quiina Schippii* Standl. of British Honduras, is properly referable to *Quiina.*

Mr. Allen's material includes a mature fruit, which may be described as follows: Fruit depressed-globose, in shape resembling that of *Hura crepitans,* about 8 cm. broad and 5.5 cm. high, slightly depressed at the apex, densely costate vertically with low rounded

ribs, filled with pulp, the pericarp hard and woody, 3 mm. thick; seeds about 1 cm. long, very densely covered with long brown hairs.

TILIACEAE

(P. C. Standley)

MORTONIODENDRON **hirsutum** Standl., sp. nov.—Frutex metralis, ramis gracilibus ochraceis teretibus, novellis pallide viridibus sat dense pilis longis patentibus fulvis hirsutis; folia breviter petiolata membranacea, petiolo crassiusculo 4–5 mm. longo hirsuto; lamina anguste oblonga vel lanceolato-oblonga 10.5–17 cm. longa 3–4.5 cm. lata, apice longissime lineari-attenuata, basi insigniter obliqua, latere interiore acuta, exteriore late rotundata vel subcordata, supra in sicco viridis ad costam sparse hirsuta, aliter glabra, venis prominulis laxe reticulatis, subtus fere concolor ad costam nervosque hirsuta, costa tenui elevata, nervis lateralibus utroque latere 8–9 tenerrimis arcuatis, venis prominulis laxe reticulatis, basi trinervia; inflorescentia (tantum in statu fructifero visa) terminalis longipedunculata ut videtur pauciflora, rhachi hirsuta, pedicellis fructiferis ca. 12 mm. longis crassiusculis; capsula depresso-globosa lutea ca. 2 cm. alta atque 2.5 cm. lata valde rugosa, valvis crassis ca. 12 mm. latis; semina in quoque loculo 2 crassa obtuse angulata 6 mm. diam. —BOCAS DEL TORO: Water Valley, vicinity of Chiriquí Lagoon, Nov. 21, 1940, *H. von Wedel 1694* (Herb. Missouri Bot. Gard. TYPE).

The genus *Mortoniodendron* Standl. & Steyerm., published in 1938 and based upon a Panama plant, has grown surprisingly in species numbers during the past few years. In 1940 two species were described from Honduras and Guatemala, the present being the fourth known representative of the genus. *M. hirsutum* may be recognized at once as distinct from the other Panama species, *M. anisophyllum* (Standl.) Standl. & Steyerm., by its fairly abundant pubescence of long, stiff, straight spreading hairs, a character which distinguishes it also from the more northern species.

BOMBACACEAE

CEIBA **Allenii** Woodson, sp. nov. Arbor epiphytica ramosissima ut dicitur ca. 10–12 m. alta; ramulis crassiusculis rimosis sparse aculeolatis. Folia desunt. Flores solitarii vel bini magni speciosi; pedicellis crassiusculis ca. 2 cm. longis; calyce late urceolato ca. 2 cm. longo ostio ca. 1.5 cm. diam. obscure irregulariterque 2- vel 5-lobato coriaceo glabro vel indistincte papillato; petalis 5 oblongis rotundatis minute emarginatis 5–6 cm. longis ca. 1.5 cm. latis carnosis

patulis extus papillatis marginibus densius saturate roseis intus lacteis; staminibus 5, filamentis 3.5–4.0 cm. longis ca. ½ longitudine connatis, antheris linearibus dorsifixis ca. 3.5 cm. longis basi bifidis. —COCLÉ: hills north of El Valle de Antón, alt. about 1000 m., May 10, 1942, *P. H. Allen 2924* (Herb. Missouri Bot. Gard. TYPE).

Ceiba Allenii falls readily into Schumann's section Eriodendron, previously represented by two species of central Brazil. From our species *C. Rivieri* (Dcne.) K. Sch. differs because of its shorter, truncate calyx, and *C. Erianthos* K. Sch. because of its more slender habit and much smaller flowers. It is very unfortunate that the plant bloomed in a leafless condition. Mr. Allen describes it as a "strangler tree" similar to species of *Ficus*.

STERCULIACEAE

THEOBROMA **asclepiadiflorum** Schery n. sp. Arbor ut dicitur 30 m. alta; ramis glabris brunneis; foliis magnis 30–40 cm. longis 10–13 cm. latis ellipticis utrinque omnino glabris apice cuspidatis basi acutis in petiolis subdecurrentibus subtus costa 1 prominentissima nervis lateralibus 24–34 arcuatis prominentibus; petiolis ca. 1.5 cm. longis supra subcanaliculatis; inflorescentiis cymiformibus, pedunculis brunneis stellato-tomentosis 3–4-pli-divisis in multos pedicellos cum bracteis parvis ad locos divisionum; floribus coccineis magnis; sepalis anguste ovato-lanceolatis ca. 12 mm. longis 3–4 mm. latis crassis reflexis extus stellato-tomentosis intus glabris margine puberulentis basi pilis crassis glandulosis luteis; petalis obovatis cochleatis 6 mm. longis 4 mm. latis interne glabris externe apice pubescentibus cum ligulis rotundatis lepidotis; staminibus et staminodiis basi cohaerentibus in tubum glabrum 2 mm. altum, filamentis glabris 3 mm. longis cum 2 antheris bilocularibus, staminodiis anguste lanceolatis 10 mm. longis basi 2 mm. latis puberulentis; ovario ellipsoideo tomentoso 5-lobato cum stylo 5-partito; fructibus ignotis.—BOCAS DEL TORO: Water Valley, Nov. 8, 1940, *H. von Wedel 1535* (Herb. Missouri Bot. Gard. TYPE).

Although fruiting material of this species is lacking, floral and vegetative characters distinguish it sufficiently to warrant description as a new species. As in *T. Cacao* the branchlets and leaves are entirely glabrous, a character which separates it from the typical *T. bicolor*. The elliptic leaves are not asymmetric at the base and are subdecurrent on the petiole. The inflorescence is a many-flowered cyme about 5 cm. long, branching 3 or 4 times in a di- or trichotomous fashion. The large red flowers, with their reflexed sepals,

cochleate petals resembling hoods and long narrow staminodes resembling horns, superficially simulate asclepiadaceous flowers. The ligules of the petals are more or less sessile, not clawed as in *T. Cacao*. The long thin staminodes appear tentacular, not foliaceous as in *T. simiarum*. The form of the ovary suggests that the fruit is shallowly 5-lobed.

DILLENIACEAE

(C. V. Morton)

Saurauja pauciserrata Hemsl.—coclé: trail to Las Minas, north of El Valle de Antón, alt. 1000 m., May 10, 1941, *Paul H. Allen 2464*. This species was described from the Volcán de Fuego, Guatemala. The present specimen agrees with the description and with a photograph of the type. Several specimens from Guatemala and El Salvador have been referred to this species, some of which may be incorrectly identified. The recently described *S. Seibertii* Standl., which also has glabrous leaves, differs (from description) in its larger sepals and petals, longer inflorescence and pedicels, and larger, many-veined, more strongly serrate leaves.

OCHNACEAE

Sauvagesia elata Benth.—bocas del toro: Old Bank Island, Feb. 8, 1941, *H. von Wedel 2029*. Previously known from South America.

MARCGRAVIACEAE

Marcgravia nepenthoides Seem.—bocas del toro: Water Valley, Sept. 17, 1940, *H. von Wedel 818;* Chiriquí Lagoon, Oct. 15, 1940, *H. von Wedel 1192*. Previously known from northern Central America, possibly reported from Costa Rica. The von Wedel specimens check well with published illustrations of this species, although differing somewhat from the only specimen in the herbarium under this name.

Norantea albido-rosea Gilg, ex char.—bocas del toro: Old Bank Island, Feb. 8, 1941, *H. von Wedel 2035*. Known from Costa Rica. This specimen may well prove to be the same as *N. Brenesii* Standl., also known from Costa Rica, corresponding within the limits of variability with specimens of the latter in the herbarium. However the original description of *N. Brenesii* does not fit the von Wedel specimen as accurately as that of *N. albido-rosea*. The plant can be distinguished from *N. subsessilis* (Benth.) D.Sm. by its subumbelliform inflorescence.

GUTTIFERAE

CLUSIA **longipetiolata** Schery, n.sp. Arbuscula circ. 30 m. alta; ramis glabris irregulariter nodulatis internodiis 0.5–1.5 cm. longis; foliis magnis longe-petiolatis glabris crassis coriaceis; laminis ellipticis vel obovato-oblongis basi cuneatis apice rotundatis margine leviter subrevolutis, nervis lateralibus multis (60-90) circ. 80° a nervo medio divergentibus utrinque prominentibus; petiolis 4.5–8.0 cm. longis crassis in sicco longitudinaliter striatis subteretibus vel angulatis sed non alatis basi lacunis semicrateriformibus; inflorescentiis terminalibus cymiformibus 2–3-floris; pedicellis principalibus 0.5–1.0 cm. longis apice cum bracteis 2 deltoideis oppositis; pedicellis secondariis subteretibus crassis 1–2 cm. longis item apice cum 2 bracteis deltoideis oppositis; floribus flavo-albis magnis circ. 5–6 cm. latis; 2 lobis calycis exterioribus basi concretis patelliformibus fulgidis, 5 aliis lobis late ovato-rotundatis coriaceis; petalis submembranaceis ovato-rotundatis, circ. 2.5 cm. longis, 3 cm. latis; toro cylindrico 6–7 mm. alto ovarium circumdante; ovario 5-carpellato pyramidali stigmati sessili; flores masculae ignotae.—BOCAS DEL TORO: vicinity of Chiriquí Lagoon, alt. near sea-level, Oct. 12, 1940, *H. von Wedel 1136* (Herb. Missouri Bot. Gard. TYPE).

This species is distinguishable especially by its large cream-colored flowers, very long unwinged petioles, and thick coriaceous leaves. The torus (fused staminodia of Vesque) is cylindric-campanulate, completely surrounding the 5-carpellate ovary to a height of 6 or 7 mm. The relationship of this species is probably with *C. rosea, C. Cooperi, C. stenophylla,* etc., from the same general region. Although belonging to a genus in which "probable new species" of distinctive appearance are continually turning up, this von Wedel specimen could not be satisfactorily matched in the herbarium, nor in Vesque's monograph nor with recent descriptions.

VIOLACEAE

(C. V. Morton)

IONIDIUM THIEMEI Donn. Smith—COCLÉ: north rim of El Valle de Antón, June 4, 1939, *Alston & Allen 1859.* This collection was distributed as *Hybanthus parietariifolius* (DC.) Loes., a synonym of the annual species, *H. attenuatus* (H. & B.) G. K. Schulze. *Ionidium Thiemei* (previously known from Mexico to Honduras) is a perennial, and differs in many ways from *H. attenuatus.* It is to be referred to the genus *Hybanthus* also, of course, but I refrain from

making a combination at the present time, inasmuch as I am preparing a paper to be published elsewhere on the North American species of this genus.

FLACOURTIACEAE

LUNANIA PITTIERI Standl.—BOCAS DEL TORO: Fish Creek, mountains, May 7, 1941, *H. von Wedel 2396*. Previously known only from the type collection from Costa Rica.

TURNERACEAE

(C. V. Morton)

ERBLICHIA ODORATA Seem.—COCLÉ: trail to Las Minas, north of El Valle de Antón, alt. 1000 m., May 10, 1941, *Paul H. Allen 2468*. This genus was long considered monotypic, but in a recent revision Standley and Steyermark (Field Mus. Publ. Bot. **22**: 351–357. 1940) have recognized three species and one variety. According to their treatment, the present specimen woud key at once to *E. Standleyi* Steyerm. of Oaxaca and Honduras. However, both Standley and Steyermark have studied Allen's specimen and are inclined to place it with *E. odorata,* the type species of the genus, which was originally collected in Panama but has not since been found there, although it is rather common in Costa Rica. Allen's collection throws some doubt on the validity of *E. Standleyi* as a species, since it differs from typical *E. odorata* in the same characters (glabrous ovary and branchlets) as *E. Standleyi* does from *E. xylocarpa.*

CARICACEAE

CARICA DOLICHAULA D. Sm.—BOCAS DEL TORO: Chiriquí Lagoon, Oct. 8, 1940, *H. von Wedel 1084*. Previously known from Costa Rica and ranging to British Honduras.

CACTACEAE

(L. Cutak)

EPIPHYLLUM MACROPTERUM (Lemaire) Britton & Rose—BOCAS DEL TORO: Water Valley, Sept. 12, 1940, *H. von Wedel 736;* vicinity of Chiriquí Lagoon, Oct. 16, 1940, *H. von Wedel 1164*. Previously known from Costa Rica.

EPIPHYLLUM PITTIERI (Weber) Britton & Rose—BOCAS DEL TORO: vicinity of Chiriquí Lagoon, Oct. 21, 1940, *H. von Wedel 1294*. Previously known from Costa Rica.

THYMELIACEAE

SCHOENOBIBLUS PANAMENSIS Standl.—BOCAS DEL TOTO: Isla Colón?, *H. von Wedel 410*, Aug. 12, 1940. This is apparently the first record of the genus for North America. Species have previously been known from South America and the West Indies.

ONAGRACEAE

JUSSIAEA LATIFOLIA Benth.—BOCAS DEL TORO: Water Valley, *H. von Wedel 781*, Sept. 14, 1940; Chiriquí Lagoon, *H. von Wedel 1384*, Oct. 18, 1940. Previously known from South America.

LOGANIACEAE

POTALIA AMARA Aubl.—BOCAS DEL TORO: Fish Creek Mts., Apr. 30, 1941, *H. von Wedel 2369*. Previously reported from Costa Rica and South America. Although to be expected from Panama, this collection is of interest in that it apparently is only the third or fourth for the genus from North America. The ovary of the von Wedel plant is four-carpellate in contrast to the two-celled condition reported by Standley (Fl. Costa Rica, p. 921. 1938) and the three-celled condition reported by Aublet (Pl. Gui. **1**: 394. *pl. 151.* 1775) in the original description for the species.

APOCYNACEAE

STEMMADENIA **lagunae** Woodson, sp. nov. Arbor vel arbuscula ca. 5–12 m. alta omnino glabra; ramulis dichotomis gracillimis, internodiis ca. 1.0–2.5 cm. longis. Folia opposita inaequalia breviuscule petiolata elliptica apice abrupte subcaudato-acuminata basi in petiolum attenuata 4.5–14.0 cm. longa 1.5–5.0 cm. lata; petiolis 0.3–0.8 cm. longis. Inflorescentiae terminales vel subterminales bostrycino-racemosae pauci- vel pluriflorae; pedunculo simplici vel basi dichotomo 1.0–2.5 cm. longo omnino minute bracteato cicatricosoque; pedicellis ca. 0.5 cm. longis. Calycis laciniae oblongae vel oblongo-oblanceolatae acutae vel obtusae valde inaequalia 1–2 cm. longae subfoliaceae. Corolla pallide aurea infundibuliformis tubo proprio 2.5–3.0 cm. longo basi ca. 0.2–0.3 cm. diam. superne contorto angustioreque ibique staminigero faucibus conicis abrupte dilatatis 1.0–1.25 cm. longis ostio ca. 0.5–0.7 cm. diam. lobis oblique obovatis acuminatis 1.5–2.0 cm. longis patulis. Folliculi ignoti.—BOCAS DEL TORO: Careening Cay, July-Aug., 1940, *H. von Wedel 570* (Herb. Missouri Bot. Gard., TYPE); Water Valley, Sept. 6, 1940, *H. von Wedel 587* (Herb. Missouri Bot. Gard., COTYPE).

This species of the *S. Alfari* complex is interesting because of its occurrence near the coast of the Chiriquí Lagoon, the other species inhabiting higher altitudes. It apparently is most closely allied to *S. Allenii* Woods., which has much shorter calyx lobes (0.6–0.9 cm.) and corollas of different proportions and size (proper tube 1.0–1.25 cm. long; throat about 2 cm. long).

PRESTONIA **Wedelii** Woodson, sp. nov. Frutex volubilis; ramulis dense ferrugineo-tomentosis. Folia brevissime petiolata ovato-elliptica apice acuminata basi obscure cordata 13–16 cm. longa 6–10 cm. lata utrinque subtus densius minute ferrugineo-tomentella, petiolo 0.2–0.5 cm. longo tomentoso. Inflorescentia dense bostrycino-racemosa multiflora; pedunculo 2–15 cm. longo ferrugineo-tomentoso, pedicellis 0.5–0.7 cm. longis similiter vestitis; bracteis anguste lanceolatis ca. 1 cm. longis foliaceis pilosis. Calycis laciniae oblongo-lanceolatae longe acuminatae 3.0–3.5 cm. longae foliaceae pilosae; squamellis deltoideis apice emarginatis vel laceratis sparse pilosulis. Corolla luteo-lactea extus dense ferrugineo-tomentella tubo infundibuliformi ca. 4 cm. longo basi ca. 0.2 cm. diametro tertia parte superiore staminigera ibique conico-dilatata ostio ca. 0.7–0.8 cm. diametro, lobis oblique ovatis acuminatis ca. 1.2 cm. longis patulis; annulo faucali bene manifesto ca. 0.1 cm. lato continuo haud lobato. Ovarium glabrum ca. 0.2 cm. altum; nectario conico-annulato ostio 5-lobato glabro ovarium paulo superante.—BOCAS DEL TORO: Water Valley, vicinity of Chiriquí Lagoon, Oct. 26, 1940, *H. von Wedel 1353* (Herb. Missouri Bot. Gard., TYPE).

Superficially similar to *P. Allenii,* but with shorter pubescence and obscurely cordate leaves. The flowers of *P. Allenii,* also, are larger, and the faucal annulus of the corolla consists of 5 discrete, round lobes.

BONAFOUSIA SANANHO (R. & P.) Mgf.—COCLÉ: vicinity of La Mesa, region of El Valle de Antón, alt. ca. 1000 m., Nov. 12, 1941, *P. H. Allen 2804.* Previously known from western Colombia (Bogotá), eastern Ecuador, eastern Peru, and western Brazil. This discovery is of particular interest since it represents an element of *Tabernaemontana* previously thought to be entirely South American. Other South American species have been collected by Mr. Allen in the region of El Valle, and this element probably is considerable in its flora.

ASCLEPIADACEAE

SARCOSTEMMA ODORATA Hemsl.—BOCAS DEL TORO: Water Valley, Nov. 23, 1940, *H. von Wedel 1755.* Previously collected in Guatemala

and Costa Rica. Our plants differ somewhat from those of Guatemala in being practically glabrous.

GONOLOBUS **Ophioglossa** Woodson, sp. nov. Frutex volubilis; ramulis gracilibus laxe pilosulis. Folia opposita longiuscule petiolata heterophylla oblongo- vel obovato-ovalia apice acuminata basi aut obtusa aut obscure sagittata aut profunde cordato-sagittata 4–10 cm. longa 1.5–4.5 cm. lata membranacea glabra; petiolo 1–2 cm. longo minute pilosulo. Inflorescentia extra-axillaris subumbellata pluriflora; pedunculo 0.3–0.7 cm. longo glabro; pedicellis tenuibus ca. 2 cm. longis glabris; bracteis minimis. Flores virides; calycis laciniis ovato-lanceolatis acuminatis ca. 0.3 cm. longis glabris; corolla rotata ca. 3 cm. diam. omnino glabra, lobis late ellipticis ca. 1.5 cm. longis margine albo; corona acute 5-gona plana laevi corollae annulum carnosum minute puberulo-papillatum aequante; gynostegio stipitato acute 5-gono ca. 0.35 cm. diam., antherae appendicibus dorsalibus anguste ligularibus ca. 0.2 cm. longis apice furcatis patulis.—COCLÉ: vicinity of La Mesa, north of El Valle de Antón, alt. about 1000 m., April 12, 1941, *P. H. Allen 2366* (Herb. Missouri Bot. Gard., TYPE).

This species of the subgenus Eugonolobus is outstanding not only because of the ligular, forked anther appendages which suggest its name, but also because of the variable leaves.

BORAGINACEAE

BOURRERIA SUPERBA Johnston var. **glabra** Schery, var. nov. Ab specie differt foliis utrinque glabris et calycibus glabris loborum marginibus intus tomentosis exceptis.—BOCAS DEL TORO: Isla Colón, June 3, 1941, *H. von Wedel 2472*. This variety resembles the species except that the lower leaf surface and the inside of the calyx tube are entirely glabrous. The margins of the calyx lobes, however, are white-tomentose on the inside. The large size of the flowers (about 4 cm. long, 4 cm. wide) distinguishes this species from other species previously known from the region. *B. superba* is known from Mexico (Michoacan).

SOLANACEAE

CAPSICUM STANDLEYANUM Morton—BOCAS DEL TORO: vicinity of Chiriquí Lagoon, Oct. 23, 1940, *H. von Wedel 1316*. Previously known from Costa Rica. This species as represented by the von Wedel specimens may not be distinct from *C. stenophyllum* Morton & Standley. The leaves are strongly dimorphic, resembling those of *Solanum diphyllum*.

BIGNONIACEAE

SCHLEGELIA **fastigiata** Schery, sp. nov. Frutex scandenti-epiphyticus; ramulis teretibus brunneis rugosis parvis cum lenticellis prominentibus ovalibus albis; foliis magnis glabris coriaceis ellipticis apice acutis basi rotundatis vel acutis in petiolo decurrentibus, nervis reticulatis supra aliquid impressis inconspicuis subtus prominentibus nervis lateralibus arcuatis ad margines, aliquid confluentibus, 12–25 cm. longis, 4–10 cm. latis; petiolis crassis, supra subcanaliculatis, ca. 1 cm. longis, 3–4 mm. latis; inflorescentiis terminalibus vel subterminalibus crassis condensatis fastigiatis sessilibus, 2–7 cm. longis, 5–10 cm. latis, plurimis subcorymbiformibus racemis compositis; pedicellis 4–8 mm. longis, 0.5–1.0 mm. latis; calycibus plus minusve 4-lobatis vel subtruncatis cylindrico-campanulatis reticulàto-subrugosis glabris, 7–10 mm. longis; corolla glabra, 1.0–2.5 cm. longa, 5-lobata, lobis ca. 2.5 mm. longis, ovato-triangularibus subhastatis imbricatis, tubo plus minusve cylindrico, ca. 8 mm. longo; staminibus 4, ca. 5 mm. longis, ⅓ longitudine tubi adjunctis; staminodio 1; filamentis glabris aequalibus linearibus basi latioribus; antheris bilocularibus, loculis longitudinaliter dehiscentibus basi divergentibus; stylo crasso, ca. 2 mm. longo apice aliquid bifidi; ovario sessili biloculari pluriovulato basi crasso-carnoso; fructibus globularibus purpureis lepidotis, circiter 14 mm. diametro.—BOCAS DEL TORO: Water Valley, Sept. 14, 1940, *H. von Wedel 773* (Herb. Missouri Bot. Gard., TYPE); Isla Colón, July 26, 1940, *H. von Wedel 154* (Herb. Missouri Bot. Gard., COTYPE); Water Valley, Oct. 31, 1940, *H. von Wedel 1447* (Herb. Missouri Bot. Gard., COTYPE).

This species seems to be most closely allied to *S. lawrancei* Standl. and *S. dariensis* Sandw. (ex char.). Like *S. dariensis* it seems to be intermediate between short, lateral inflorescence types (sect. Parantanaecium K. Schum.) and long terminal inflorescence types (sect. Euschlegelia K. Schum.). The species differs from *S. lawrancei* chiefly in having a very characteristic inflorescence and more narrowly elliptic leaves, and from *S. dariensis* (ex char.) especially in having elliptic rather than broadly ovate, more or less cordate leaves.

The most striking and characteristic feature of this species is the dense fastigiate inflorescence which resembles "witches broom." The many pedicels and peduncles are so congested that it would be impossible for each to bear a flower simultaneously. Leaves are elliptic, short-petiolate, acute to rounded at the base and somewhat

decurrent into the petiole, acute apically. The flowers are reported as red (calyx) and white (corolla). The calyx is subtruncate or shallowly 4-lobed, glabrous within and without. The corolla is glabrous, small, 1.0–2.5 cm. long, 5-lobed, the lobes being imbricate, ovate-triangular, subhastate. The tube is about 8 mm. long and bears at about 3 mm. from the base 4 stamens and one staminode. The filaments are glabrous, linear, slightly broader at the base than above. The anthers are bilocular, the locules dehiscing longitudinally and diverging from one another basally. The style is stigmatose and slightly bifid apically. The ovary is 2-celled, many ovules being borne in each cell from a central placenta.

ARRABIDAEA CHICA (H. & B.) Verl.—BOCAS DEL TORO: Water Valley, Sept. 19, 1940, *H. von Wedel 860*. Previously known from British Honduras and Guatemala, possibly other countries.

LENTIBULARIACEAE

(C. V. Morton)

UTRICULARIA ENDRESII Rchb. f.—COCLÉ: hills north of El Valle de Antón, alt. 1000 m., Sept. 1, 1941, *Paul H. Allen 2704*. Previously known only from Costa Rica.

RUBIACEAE

(P. C. Standley)

ISERTIA HYPOLEUCA Benth.—BOCAS DEL TORO: Nances Cay Island, *H. von Wedel 580*, Sept. 2, 1940. Previously known from Colombia and other South American countries.

GUETTARDA CRISPIFLORA Vahl.—BOCAS DEL TORO: Isla Colón, *H. von Wedel 508a*, Aug. 20, 1940. Previously known from Costa Rica and the West Indies.

ALLENANTHUS ERYTHROCARPUS Standl.—This well-marked genus has been known from the single type collection, and still has been collected only in the region of the type. An additional collection of it is worth reporting: COCLÉ: Region of El Valle de Antón, trail to Las Minas, alt. about 700 m., Sept. 1941, *P. H. Allen 2713*. A tree of 8–25 m.; fruits pink to red; trees abundant and conspicuous along the upper reaches of the Río Antón.

RUDGEA SKUTCHII Standl.—COCLÉ: hills north of El Valle de Antón, trail to La Mesa, alt. about 1000 m., Aug., 1941, *P. H. Allen 2699*. A shrub 3 m. tall, the flowers white. Described from the vicinity of El General, Costa Rica, and known heretofore only from the original collection.

CUCURBITACEAE

SELYSIA PRUNIFERA (Poepp. & Endl.) Cogn.—BOCAS DEL TORO: Water Valley, Nov. 13, 1940, *H. von Wedel 1596*. Standley reports that this is the first record of this genus north of South America. The species was previously known from Peru.

EXPLANATION OF PLATE

PLATE 30

Figs. 1–3. *Sobralia Allenii* L. Wms.: fig. 1, plant, × ½; fig. 2, flower with segments expanded, × 1; fig. 3, column, × 2.

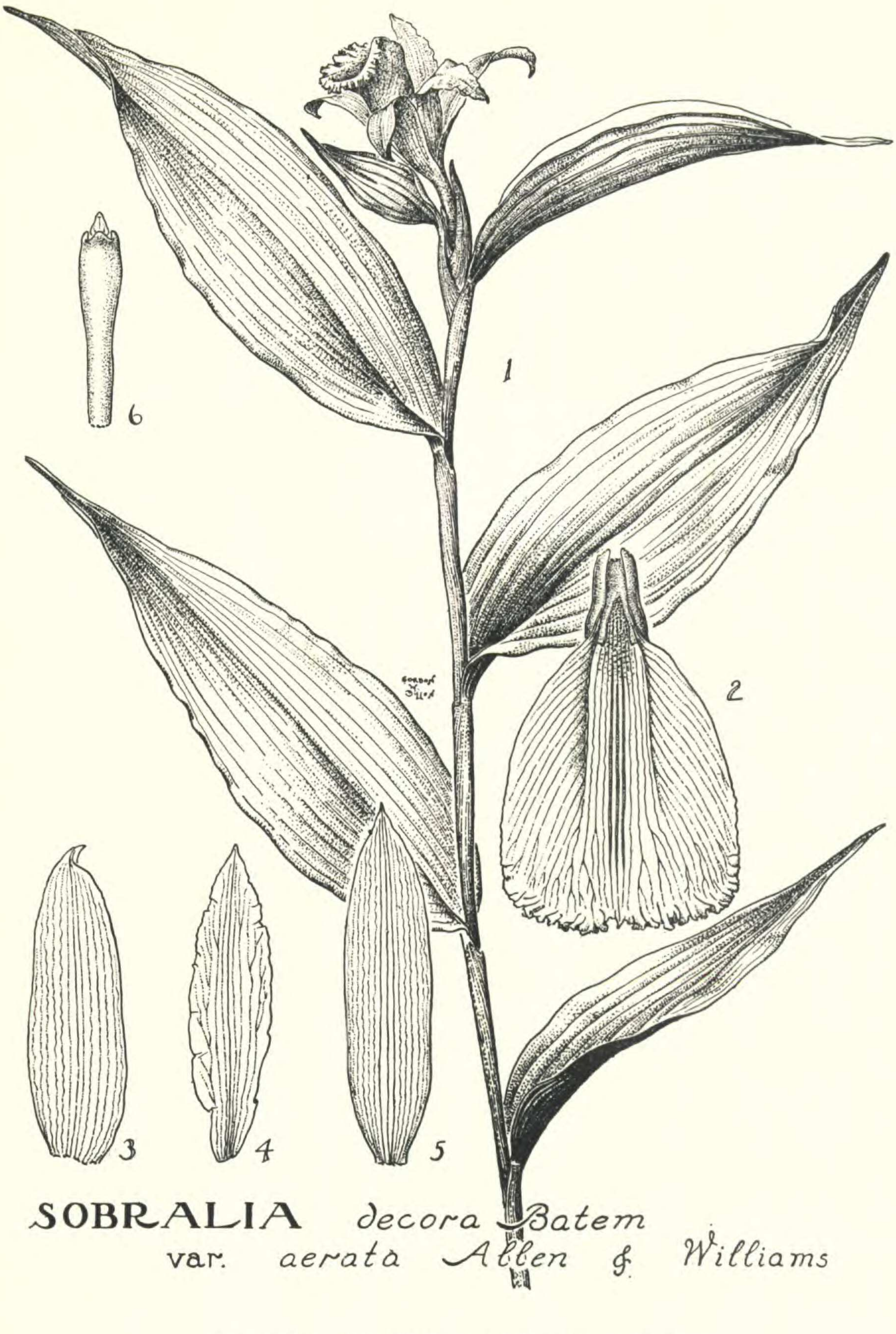
Figs. 4–7. *Cryptophoranthus lepidotus* L. Wms.: fig. 4, plant, × ½; fig. 5, lip, × 5; fig. 6, lip and column from the side, × 5; fig. 7, petal, × 5.

WOODSON & SCHERY—FLORA OF PANAMA

EXPLANATION OF PLATE

PLATE 31

Sobralia decora var. *aerata* Allen & Williams: fig. 1, plant, × ½; fig. 2, lip expanded, × 1; fig. 3, lateral sepal, × 1; fig. 4, petal, × 1; fig. 5, dorsal sepal, × 1.



SOBRALIA *decora* Batem
var. *aerata* Allen & Williams

EXPLANATION OF PLATE

PLATE 32

Figs. 1–3. *Stelis Allenii* L. Wms.: fig. 1, plant, × ½; fig. 2, column, petals and lip seen from the front, × 8; fig. 3, flower expanded, × 2.

Figs. 4–8. *Stelis atrorubens* L. Wms.: fig. 4, plant, × ½; fig. 5, flower expanded, × 5; fig. 6, lip from above, × 10; fig. 7, lip from side, × 10; fig. 8, petal, × 10.

Figs. 9–12. *Stelis montana* L. Wms.: fig. 9, flower expanded, × 2½; fig. 10, lip from above, × 10; fig. 11, lip from the side, × 7½; fig. 12, petal, × 5.

WOODSON & SCHERY—FLORA OF PANAMA

EXPLANATION OF PLATE

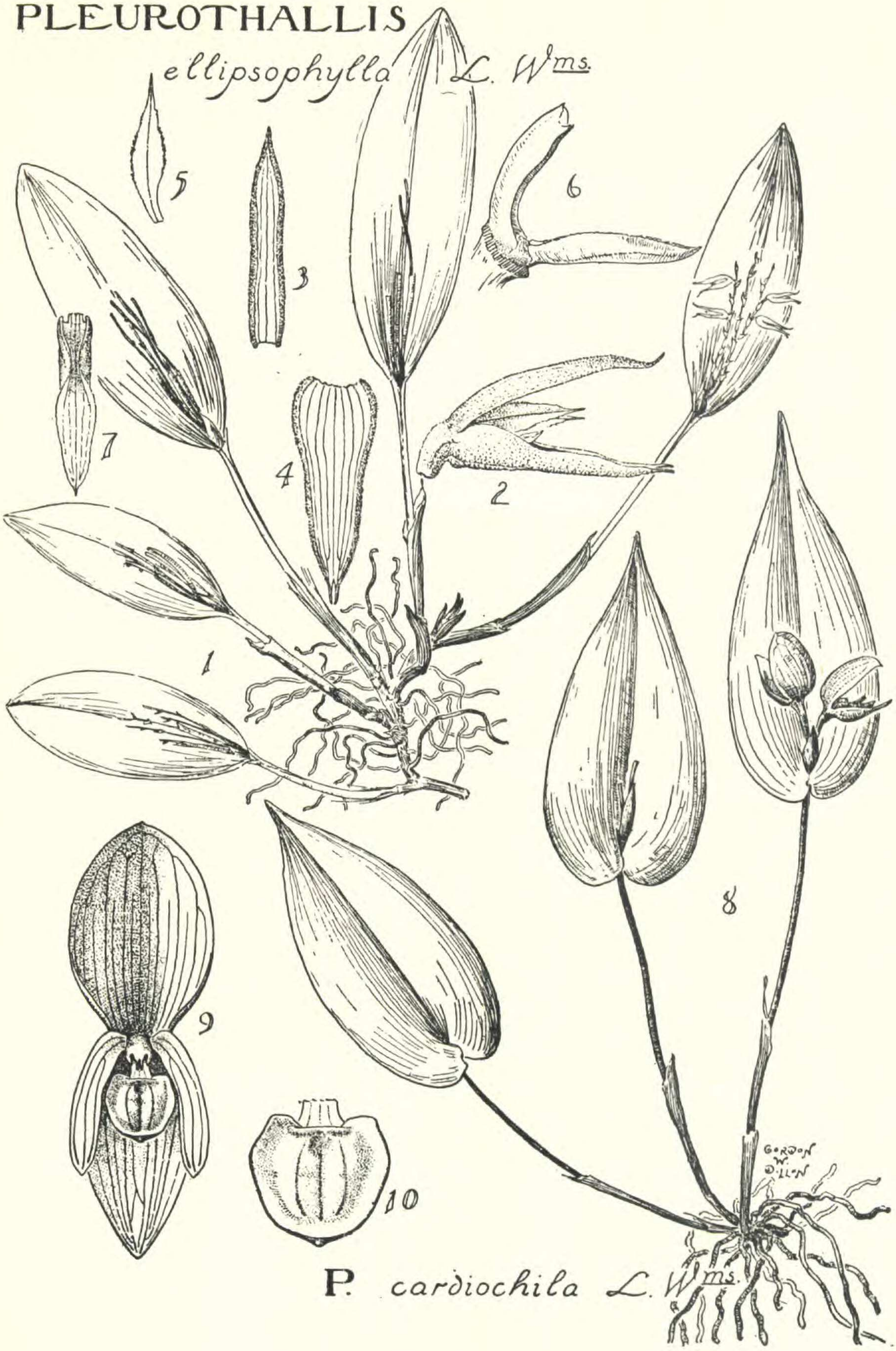
PLATE 33

Figs. 1–7. *Pleurothallis ellipsophylla* L. Wms.: fig. 1, plant, × ½; fig. 2, flower from the side, × 2½; fig. 3, dorsal sepal, × 2½; fig. 4, lateral sepals, × 2½; fig. 5, petal, × 2½; fig. 6, lip and column from the side, × 5; fig. 7, lip from above, × 5.

Figs. 8–10. *Pleurothallis cardiochila* L. Wms.: fig. 8, plant, × ½; fig. 9, flower expanded × 1½; fig. 10, lip, × 3.

PLEUROTHALLIS

ellipsophylla L. Wms.



P. *cardiochila* L. Wms.

EXPLANATION OF PLATE

PLATE 34

Platyglottis coriacea L. Wms.: fig. 1, plant, × 1; fig. 2, column and lip from the side, × 3; fig. 3, column from front with the lip bent down, × 3; fig. 4, dorsal sepal, × 3; fig. 5, petal, × 3; fig. 6, lateral sepal, × 3; fig. 7, anther from below, × 10.

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